Ideas with Passion

PRIMEA LINE 2007

TECHNICAL SERVICE MANUAL

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REV. 00- Mar. 07

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CHAPTER 1
INTRODUCTION

REV.00

1.1 Documentation required

The following technical documentation l is required for repairs:

Instruction booklet for specific model
Technical documentation for specific model (diagrams, exploded drawings)

1.2 Tools and equipment required

As well as the standard equipment, the tools listed below are required.

1 Special screwdriver with Torx T15 tip and Pozi Drive screwdriver for casing and work on the grinder.

1 digital thermometer with full 200°C scale
This must be suitable for measuring in liquids and on surfaces.

1 set of pliers for Oetiker clamps

1 pincer

1.3 Safety warning

Before starting operations on the machine, consult the instruction booklet.
Observe all current standards related to the repair of domestic appliances.

Always disconnect the power plug from the mains before carrying out repairs. Simply turning off the main switch is not sufficient to prevent electrical discharge.

This domestic appliance is rated as insulation class I.
Insulation and dielectric rigidity tests must be performed on completion of repairs.

CHAPTER 2
TECHNICAL DATA

REV.00

2.1 Product and component technical data

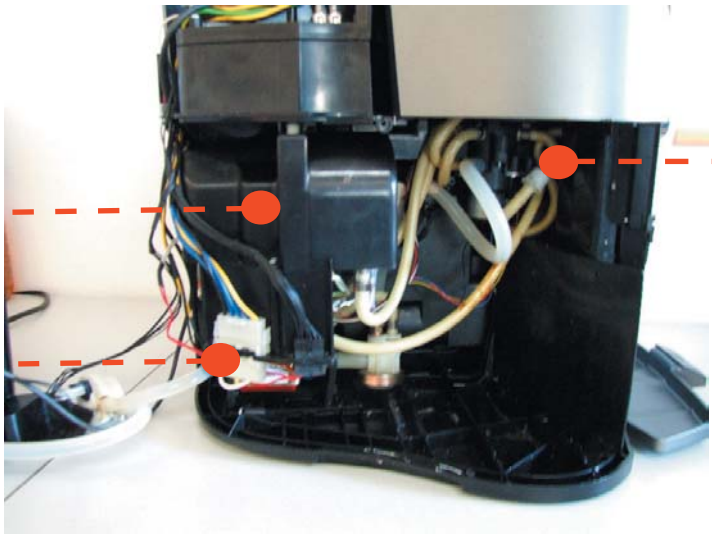
Power supply and output:	230V~, 50 Hz, 1500 W / 120V~,50/60 Hz, 1300W
Temperature control:	2 (NTC) variable resistor sensors – transmit the value to the electronic board
Safety system:	Thermostat at 190°C with manual reset on both boilers + 192° fuse
Coffee heat exchanger output: Stainless steel	1300 W - to dispense coffee and hot water
Steam heat exchanger output Stainless steel	1090 W – for steam delivery
Motor-driven tray	24V stepper motor
Water levelsensor	Capacitive sensor
Gearmotor:	DC motor (24 V) in two directions of rotation
Cup warmer plate:	Activated via MENU display PTC Type
Pump:	Ulka reciprocating piston type with thermal cutout at 100°C 48 W, 230V, 50 Hz, Type EP5 GW 41 W, 120V, 50 Hz approx. 13 - 15 bars
Pressure relief valve:	Opening at approx. 17 - 19 bars
Water filter:	In tank
Grinder:	DC motor with ceramic plate grinders
Coffee strength control	Hall sensor – Pulse control. Dose adjustment can be set from 7 – 10g.
Multi-function valve	Beverage selection control
Cappuccino valve	Enables automatic frothing
Amps:	During heating phase approx. 5.6A to 230V / 10.8A to 120V
Energy consumption:	On Stand –By approx. 4.6 Wh in machine ready status no beverages dispenses 39Wh 4.5A (230V)
Dimensions: l x h x d in mm:	350/390/430
Weight:	14 kg
Water tank holds:	1.75 l / 0.46 Gal
Coffee container capacity	350 g. coffee beans
Milkcontainer capacity	0.32 l / 10.8 oz
Heat exchanger capacity:	approx. 10 cc / 0.34 oz
Water circuit filling time:	approx. 10 sec on first filling cycle
Heating time:	approx. 55 sec.
Dispensed drink temperature:	approx. 73°C - 83°C
Grinding time:	approx. 6-8 sec.

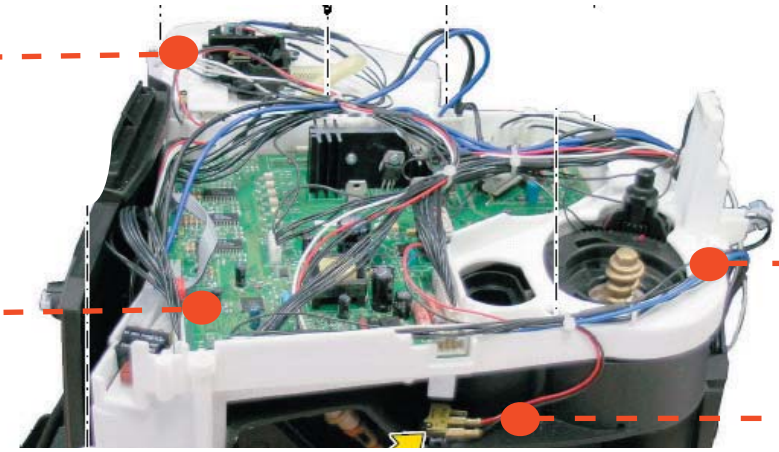
2.2 Internal / external machine components

External:

Internal:

Brew drive assembly compartment


Boiler valve assembly
Multi-way valve
Cappuccino valve assembly


Cappuccino valve assembly
Grinder
Power board
Door microswitch

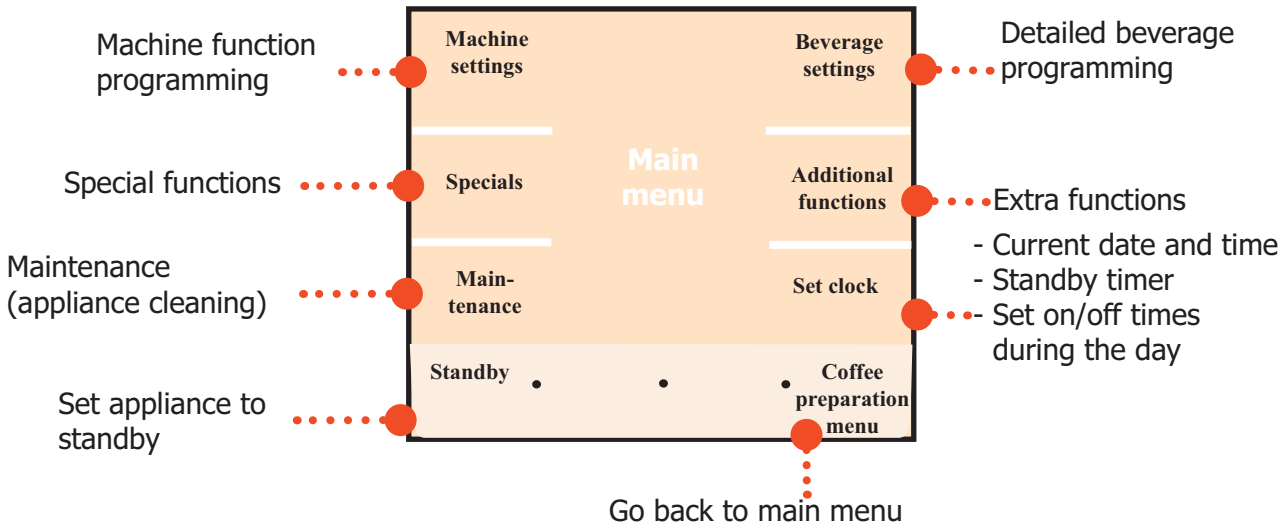
CHAPTER 3
BRIEF
INSTRUCTIONS

REV.00

3.1 Client and programming menu

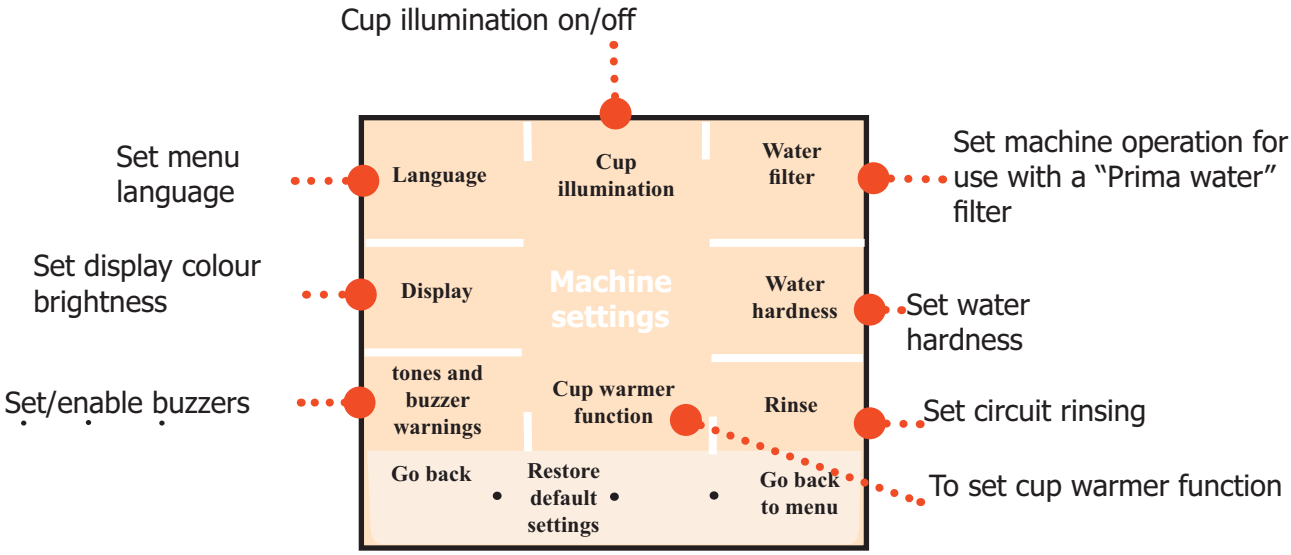
Client menu: To access, press "Programming menu"

The programming menu will open:

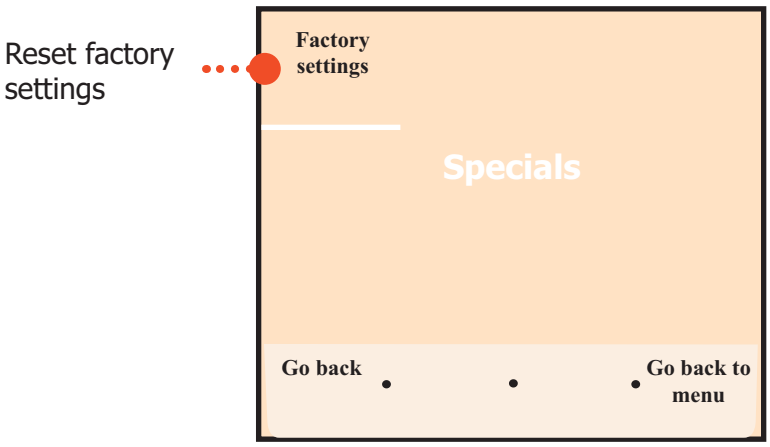


Submenu

Machine settings: Modify main machine parameters

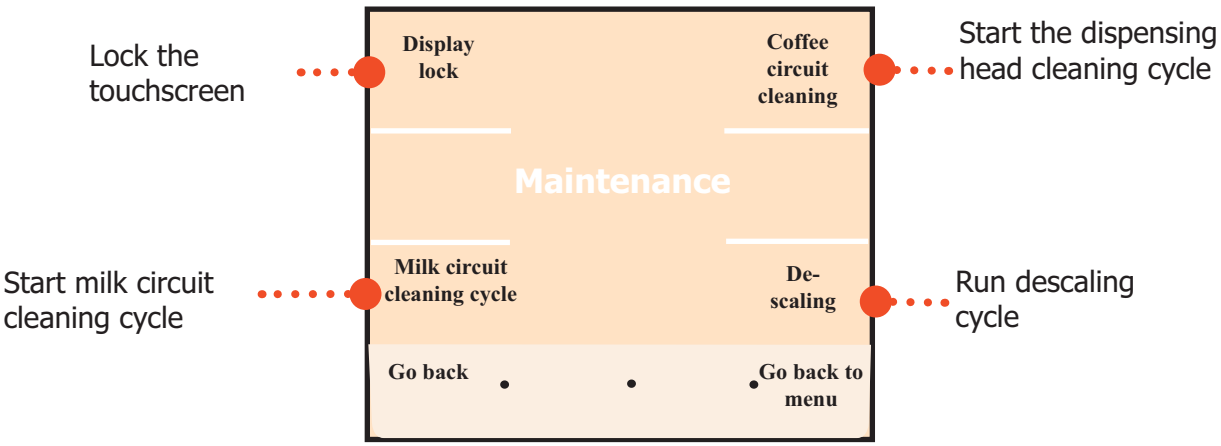


Special function: Reset factory settings

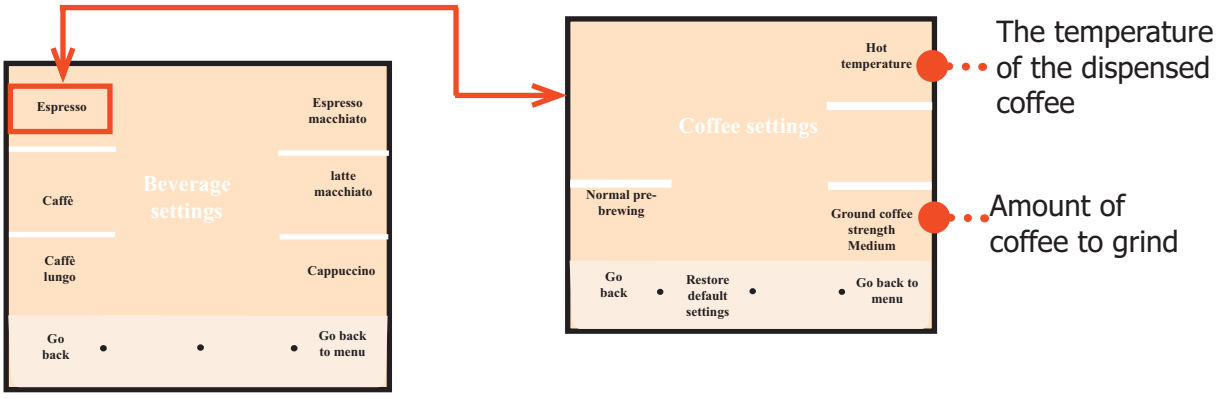


Maintenance: Maintenance and appliance cleaning

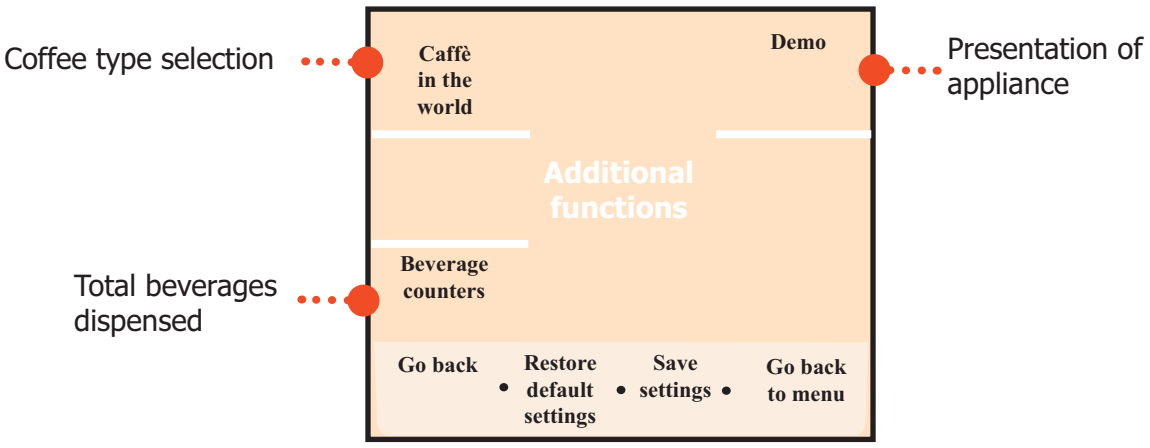
From this menu you can:



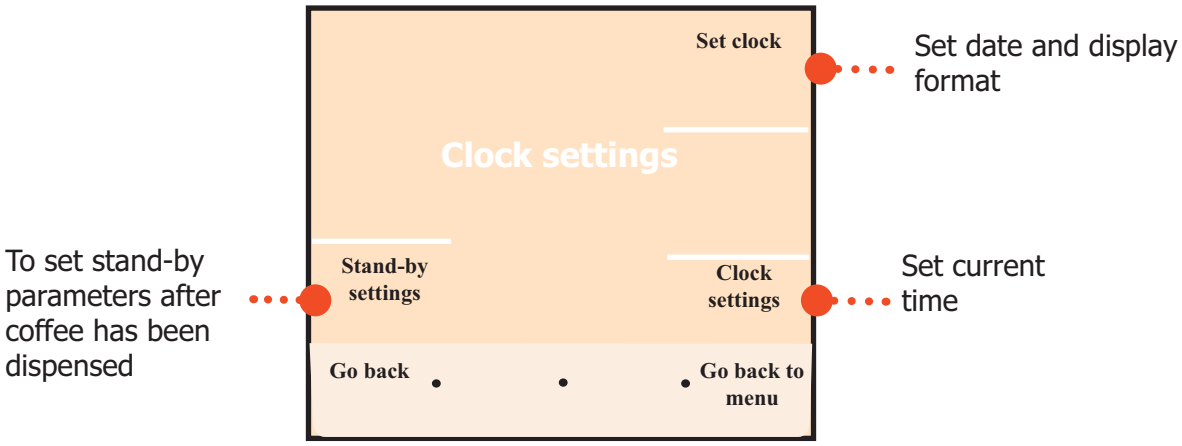
Beverage settings: Programming individual beverages



Additional functions:



Timer settings:



3.2 Maintenance and cleaning

STEPS		
A	Empty coffee grounds drawer	As instructed
B	Empty drip tray	As necessary
C	Clean water tank	Weekly
D	Clean the coffee bean hopper	As necessary
E	Clean casing	As necessary
F	Clean and grease the dispensing head	Once a month or every 500 coffees dispensed
G	Clean brew group filters	Once a month
H	Descaling	As instructed
I	Clean milk circuit	After each time milk dispensed
J	Clean drip tray	Weekly
K	Clean coffee circuit	Weekly

Descaling for Primea Duo - Touch Plus and Touch

Descaling			
Hardness	**Water hardness**	**Descaling frequency**	**Descaling frequency when usingAqua Prima**
1	Soft water (up to 7ºdH)	Approx. every 3 months/120 l (31.6 Gal)	Approx. every 3 months/ 150 l (39.5 Gal)
2	Medium water (7º-14ºdH)	Approx. every 2 months / 90 l (23.75 Gal)	Approx. every 2 months/ 120 l (31.6 Gal)
3	Hard water (15º-21ºdH)	Approx. every 6 weeks/ 60 l (15.8 Gal)	Approx. every 6 weeks/ 90 l (23.75 Gal)
4	Very hard water (over 21ºdH)	Approx. every 4 weeks/ 30 l (7.9 Gal)	Approx. every 4 weeks/ 60 l (15.8 Gal)

Descaling for Primea Ring

DESCALING			
Hard-ness	**Water hardness**	**Descaling frequency**	**Descaling frequency when usingAqua Prima**
1	Soft water (up to 7ºdH)	Approx. every 3 months/120 l (31.6 Gal)	Approx. every 3 months/ 240 l (63.2 Gal)
2	Medium water (7º-14ºdH)	Approx. every 2 months/ 90 l (23.75 Gal)	Approx. every 2 months/ 180 l (47.4 Gal)
3	Hard water (15º-21ºdH)	Approx. every 6 weeks/ 60 l (15.8 Gal)	Approx. every 6 weeks/ 120 l (31.6 Gal)
4	Very hard water (over 21ºdH)	Approx. every 4 weeks/ 30 l (7.9 Gal)	Approx. every 4 weeks/ 60 l (15.8 Gal)

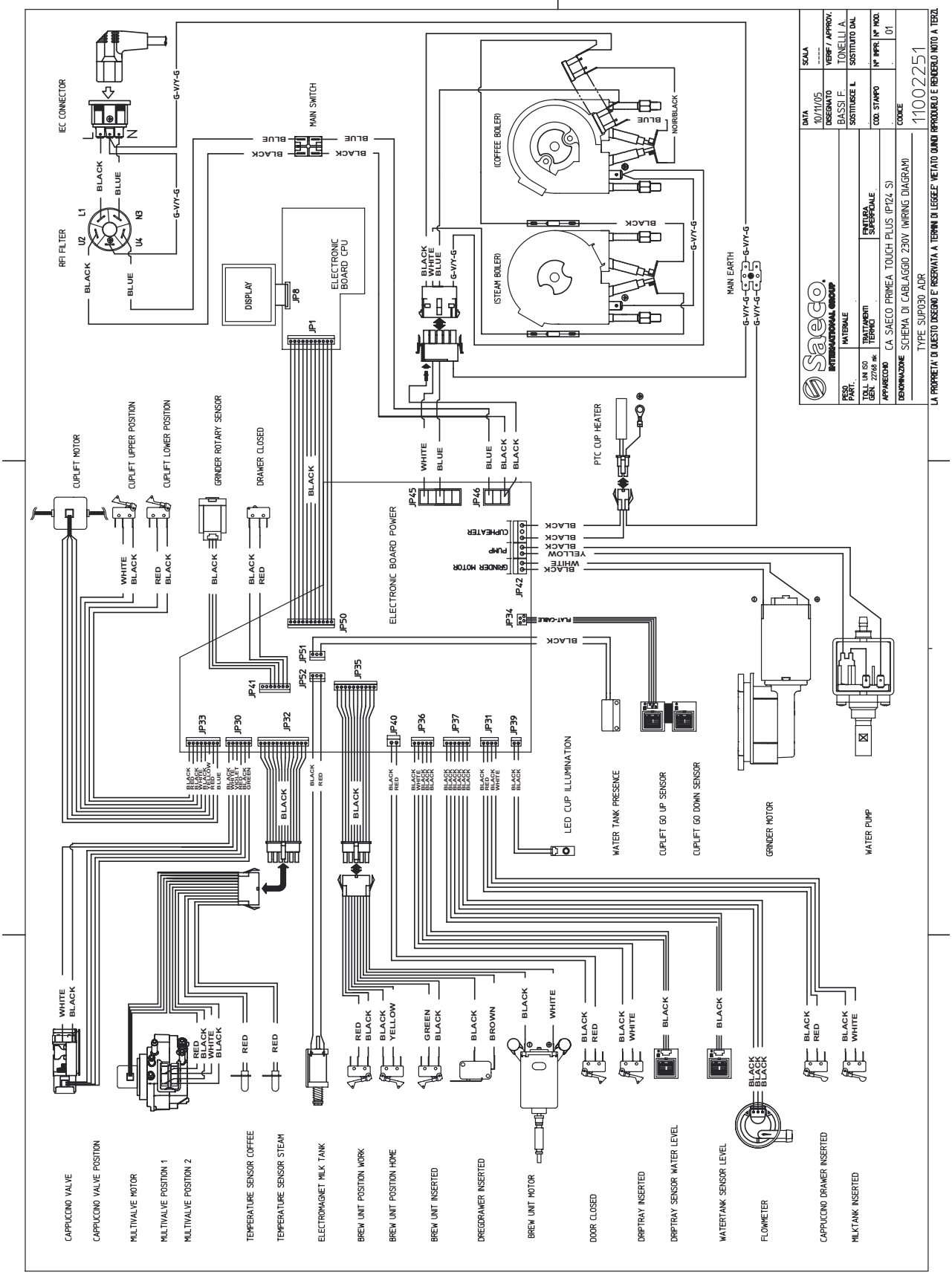
Model	Function	Screen messages	Possible variations	Mode	Duration	Possibility to stop/ change
Primea Cappuccino Touch Plus	**Milk**	The appliance requests that the milk circuit is **pulse-rinsed** right away; beverages can still be selected.		Press key or select from menu	Approx. 30 Sec	No
		After 20 minutes If department is not rinsed, beverages can no longer be selected.	This refers tomilk-based beverages only.	Press key or select from menu	Approx. 30 Sec	No
		After **14 days**, the appliance requests that is cleaned with **with a cleaning tablet or powder.**		Press key or select from menu	Approx. 10 Min	During diagnosis
		If it is not cleaned within **21 days**, all beverages will be blocked.		Press key or select from menu	Approx. 10 Min	During diagnosis
	frequency	From when the descaling message appears, the **appliance counts down internally from 200 coffees**. After **100 coffees, the countdown appears on the display,** then for the **last 30 coffees, it flashes** (200 beverages of any type and size in ml are counted).	The countdown for the whole 200 coffees is shown on the display.		Approx. 45 Min	During diagnosis
Primea Cappuccino Touch	**Milk**	The appliance requests that the milk circuit is **pulse-rinsed** right away; beverages can still be selected.		Press key or select from menu	Approx. 30 Sec	No
		After 20 minutes If department is not rinsed, beverages can no longer be selected.	This refers to milk-based beverages only.	Press key or select from menu	Approx. 30 Sec	No
		After **14 days**, the appliance requests that is cleaned with with a **cleaning tablet or powder.**		Press key or select from menu	Approx. 25 Min	During diagnosis
		If it is not cleaned within **21 days**, all beverages will be blocked.		Press key or select from menu	Approx. 25 Min	During diagnosis
	frequency	From when the descaling message appears, the **appliance counts down internally from 200 coffees.** After **100, the countdown appears on the display** then **for the last 30 coffees, the message flashes on the screen** (200 beverages of any type and size in ml are counted).	The countdown for the whole 200 coffees is shown on the display.		Approx. 45 Min	During diagnosis
Primea Cappuccino Ring	**Milk**	The appliance requests that the milk circuit is **pulse-rinsed** right away; beverages can still be selected.		Press key or select from menu	Approx. 30 Sec	No
		After 20 minutes If it is not rinsed, milk-based beverages can no longer be selected.		Press key or select from menu	Approx. 30 Sec	No
		After **7 days**, the appliance requests that is cleaned with with **a cleaning tablet/ powder.**	From **V. SW. 01.00.07**: After 14 days, the appliance requests that is cleaned with with a cleaning tablet or powder.	Press key or select from menu	Approx. 25 Min	During diagnosis, you can vary notification and block times, and during testing you can reset Lev.. B mode.
		If it is not cleaned within **14 days**, all beverages will be blocked,	From **V. SW. 01.00.07**: If it is not cleaned within 21 days, all beverages will be blocked.	Press key or select from menu	Approx. 25 Min	During diagnosis, you can vary notification and block times, and during testing you can reset Lev. B
	frequency	From when the descaling message appears, the **appliance counts down on the display from 100 coffees. Then for the last 30, the message flashes on the screen** (100 beverages of any type and size in ml are counted).	From when the descaling message appears, the appliance counts down on the display from 200 coffees, then at the last 30, the message flashes on the screen (200 beverages of any type and size in ml are counted).	The appliance counts down remaining beverages every 60 seconds for approx. 5 seconds.	Approx. 45 Min	During diagnosis, you can vary notification and block times, and during testing you can reset Lev. B
All models	**Coffee circuit rinse**	When ready, the coffee circuit is rinsed.		The unit rises and releases approx. 50ml of water.	Approx. 30 Sec	This function can be disabled from the menu.
	Clean coffee circuit	Runs only when selected		The unit rises and releases approx. 600 ml of water in spurts.	Approx. 25 Min	During diagnosis
	Empty coffee grounds	After 24 coffees, the appliance requests that grounds are removed.		Resets when drawer is extracted for 5 seconds with the appliance switched on.	Approx. 5 Sec	During diagnosis
	Aqua Prima	**60 litres** or **90 days** from the first use or after it has been unused for **20 days**.		When enabled from the menu, approx. 500ml of water is released.	Approx. 60 Sec	No

CHAPTER 4
DIAGRAMS

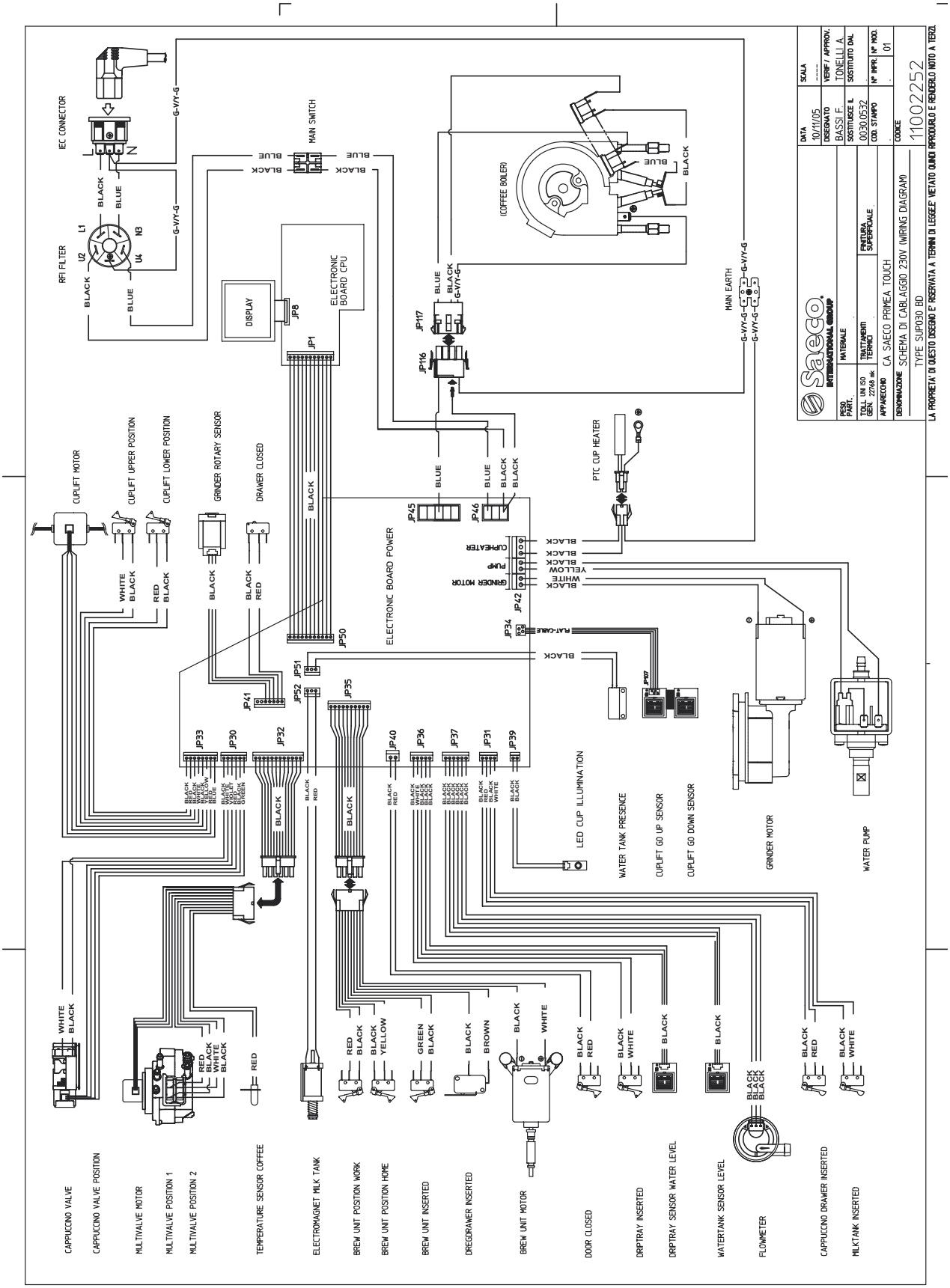
REV.00

4.1 Wiring diagram

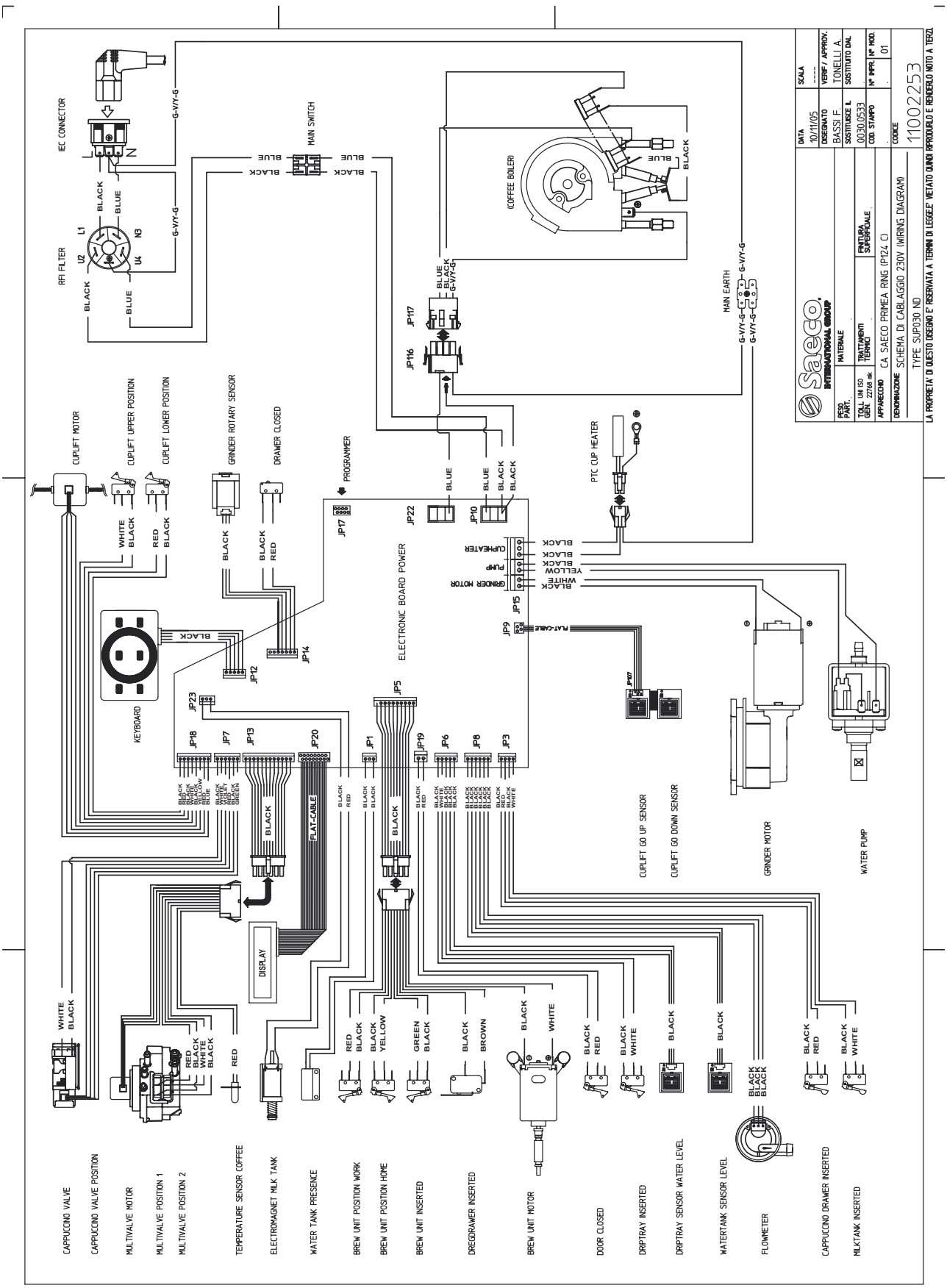
Primea Touch Plus



Primea Touch



Primea Ring


IEC CONNECTOR
MAIN SWITCH
RFI FILTER
(COFFEE BOILER)
MAIN EARTH
CUPLIFT MOTOR
CUPLIFT UPPER POSITION
CUPLIFT LOWER POSITION
GRINDER ROTARY SENSOR
DRAWER CLOSED
PROGRAMMER
PTC CUP HEATER
ELECTRONIC BOARD POWER
KEYBOARD
DISPLAY
FLAT-CABLE
CUPLIFT GO UP SENSOR
CUPLIFT GO DOWN SENSOR
GRINDER MOTOR
WATER PUMP
CAPPUCCINO VALVE
CAPPUCCINO VALVE POSITION
MULTIVALVE MOTOR
MULTIVALVE POSITION 1
MULTIVALVE POSITION 2
TEMPERATURE SENSOR COFFEE
ELECTROMAGNET MILK TANK
WATER TANK PRESENCE
BREW UNIT POSITION WORK
BREW UNIT POSITION HOME
BREW UNIT INSERTED
DREGDRAWER INSERTED
BREW UNIT MOTOR
DOOR CLOSED
DRIPTRAY INSERTED
DRIPTRAY SENSOR WATER LEVEL
WATERTANK SENSOR LEVEL
FLOWMETER
CAPPUCCINO DRAWER INSERTED
MILKTANK INSERTED
Saeco
INTERNATIONAL GROUP
DATA 10/11/05
DISEGNATO BASSI F.
SCALA ----
VERIF./ APPROV. TONELLI A.
SOSTITUISCE IL 00310533
SOSTITUITO DAL
N° MPN | N° MOD. 01
COD. STAMPO
CODICE 11002253
DESCRIZIONE SCHEMA DI CABLAGGIO 230V (WIRING DIAGRAM)
TYPE SUP030 ND
LA PROPRIETA' DI QUESTO DISEGNO E' RISERVATA A TERMINI DI LEGGE E' VIETATO COPIARLO E RENDERLO NOTO A TERZI

4.2 Component load table

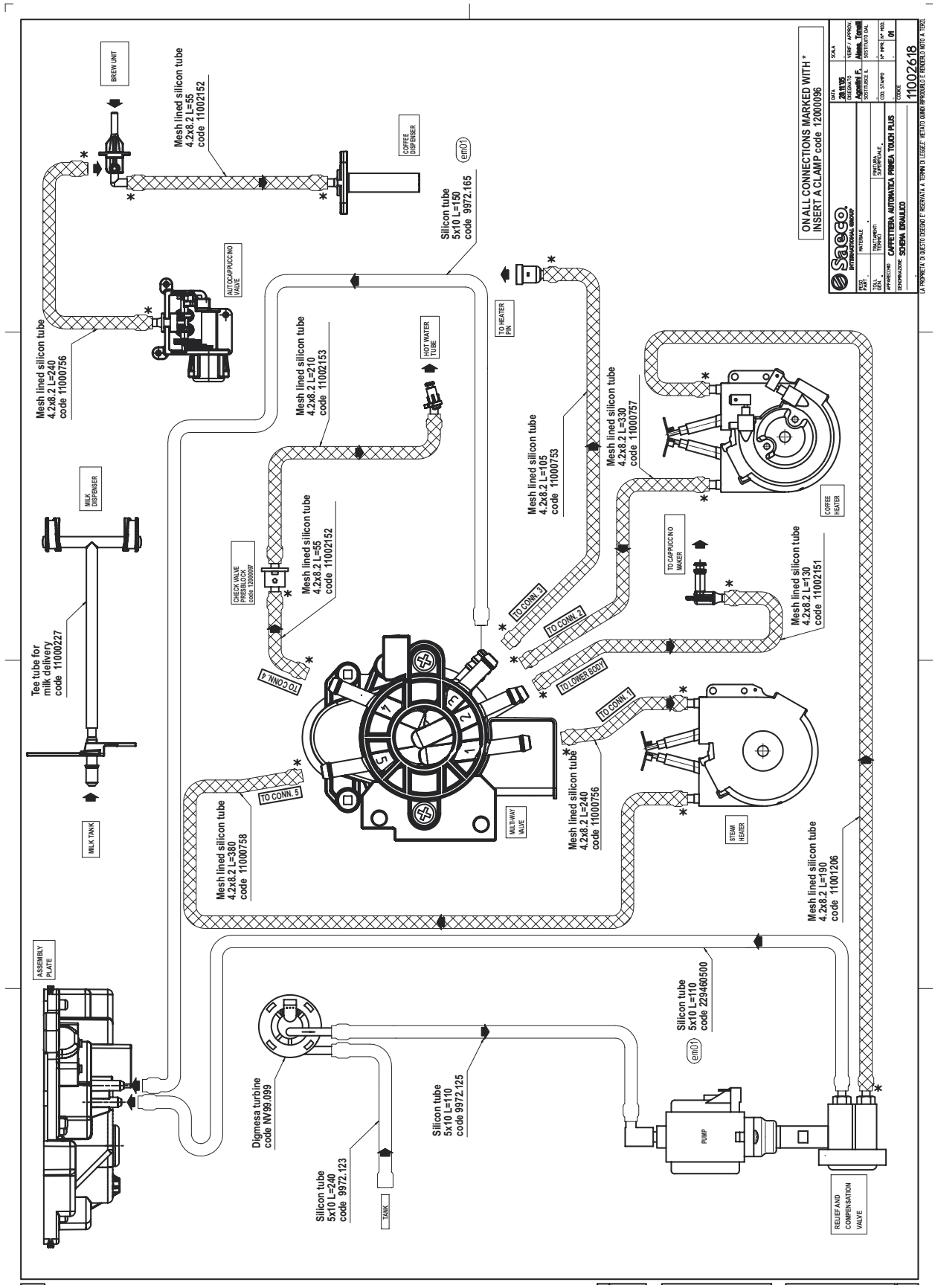
Component	Connector	Pin number	Resistance/Voltage
Mains voltage/Mains switch	JP 46	1/3	230 V AC / 120V AC
Autocappuccino valve drive	JP 30		304 Ohm 24 V AC
Milk tank presence microswitch	JP 31	3/4	3.3 V DC
Cappuccino valve presence microswitch	JP 31	1/2	3.3 V DC
Drip tray motor	JP 33	1/2	90 Ohm 24V AC
	JP 33	3/4	91 Ohm 24V AC
Upper drip tray microswitch	JP 33	7/8	3.3 V DC
Lower drip tray microswitch	JP 33	5/6	3.3 V DC
Ulka pump	JP 42	4/5	230V AC
Multi-valve motor	JP 32	5/6	90 Ohm 24V AC
	JP 32	7/8	90 Ohm 24V AC
Upper multi-valve microswitches	JP 32	9/10	3.25 V DC
Lower multi-valve microswitches	JP 32	11/12	3.25 V DC
Cup warmer	JP 42	1/3	Approx. 560 Ohm 230 / 120 V AC
Steam boiler sensor	JP 32	3/4	3.5 Kilo Ohm x 25°C
Coffee boiler sensor	JP 32	1/2	3.5 Kilo Ohm x 25°C
Unit door microswitch	JP 40		24 V DC
Unit presence microswitch	JP 35	5/6	3.3 V DC
Gearmotor microswitches (up unit)	JP 35	3/4	3.3 V DC
Gearmotor microswitches (unit down)	JP 35	1/2	3.3 V DC
Dreg drawer microswitch	JP 35	7/8	24 V DC
Drip tray microswitch	JP 36	4/5	3.25 V DC
Drip tray full capacitive sensor	JP 36	1/2	3.3 V DC
Gearmotor	JP 35	9/10	22 Ohm
Full tank capacitive sensor	JP 37	6	3.3 V DC
Coffee container cover microswitch	JP 41	1/2	3.25 V DC
Coffee boiler 1300W	JP 45	3	39 Ohm 230 V AC
Cup illumination ON led	JP 39		2,0 V DC
Motor-driven tray capacitive key activated	JP 34	2/3	4.5 V DC
Motor-driven tray capacitive key not activated	JP 34	4/3	4.5 V
Grinder	JP 42	6/7	64 Ohm AC 250 V DC 120V DC
Grinder absorption - coffee container empty			Approx. 200 mA - Ac 420 mA
Grinder absorption - Coffee container full			230V AC 400-450 mA 120V AC 950/1050 mA

Fuse F1 T8A - 250V AC To protect the grinder, coffee boiler, cup warmer and pump.
Fuse F1 T15A - 125V AC

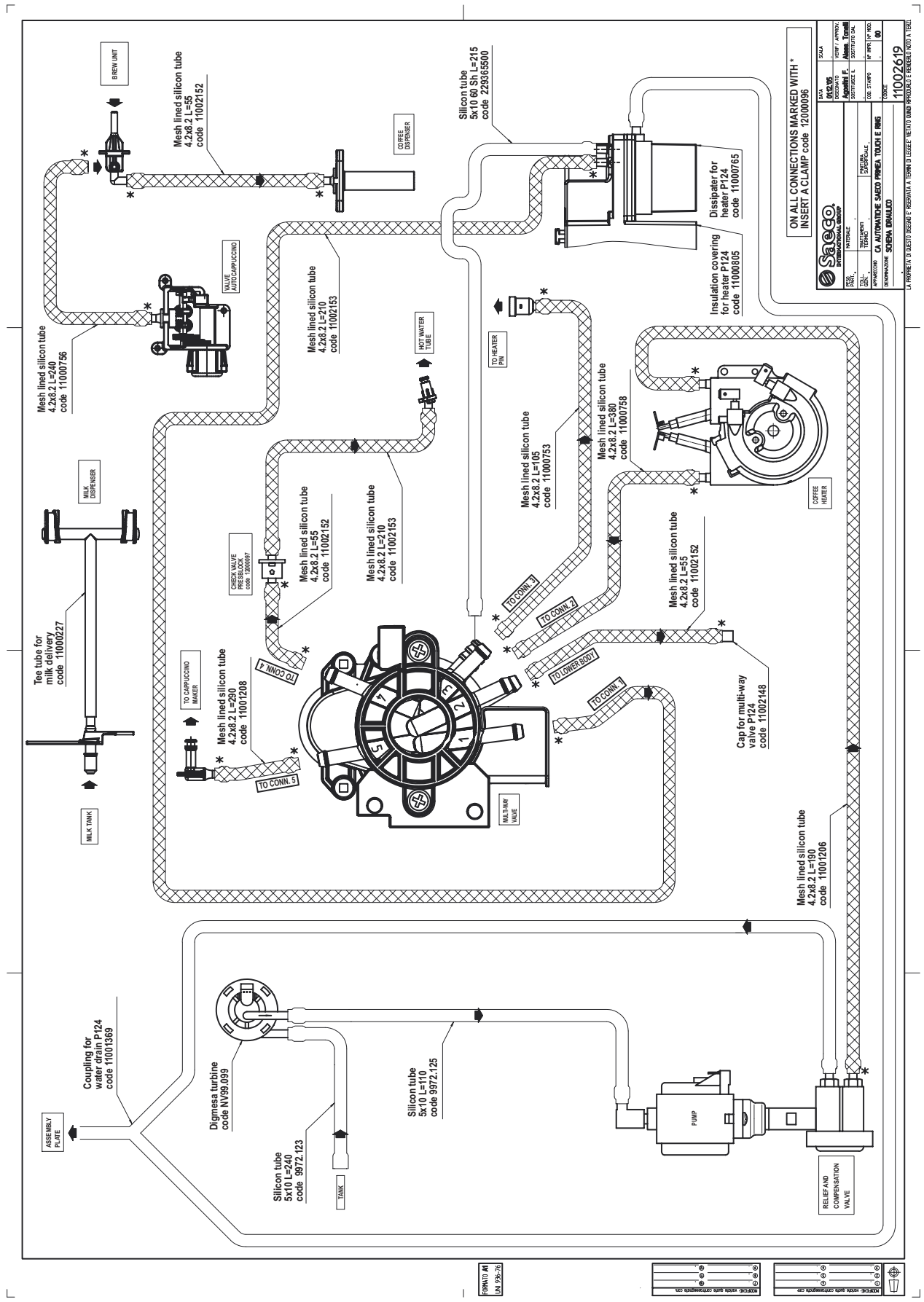
Fuse F3 T2A To protect the mains electricity power card

4.3 Water circuit

Primea Touch Plus


BREW UNIT
Mesh lined silicon tube 4.2x8.2 L=55 code 11002152
COFFEE DISPENSER
Silicon tube 5x10 L=150 code 9972.165
ON ALL CONNECTIONS MARKED WITH * INSERT A CLAMP code 12000096
AUTOCAPPUCCINO VALVE
Mesh lined silicon tube 4.2x8.2 L=240 code 11000756
Mesh lined silicon tube 4.2x8.2 L=210 code 11002153
HOT WATER TUBE
TO HEATER PIN
Mesh lined silicon tube 4.2x8.2 L=105 code 11000753
Mesh lined silicon tube 4.2x8.2 L=330 code 11000757
COFFEE HEATER
MILK DISPENSER
CHECK VALVE PRESBLOCK code 12000097
Mesh lined silicon tube 4.2x8.2 L=55 code 11002152
TO CAPPUCCINO MAKER
Mesh lined silicon tube 4.2x8.2 L=130 code 11002151
TO CONN. 3
TO CONN. 7
TO CONN. 4
TO LOWER BODY
Tee tube for milk delivery code 11000227
TO CONN. 1
TO CONN. 5
Mesh lined silicon tube 4.2x8.2 L=380 code 11000758
MULTI-WAY VALVE
Mesh lined silicon tube 4.2x8.2 L=240 code 11000756
STEAM HEATER
MILK TANK
Mesh lined silicon tube 4.2x8.2 L=190 code 11001206
ASSEMBLY PLATE
Silicon tube 5x10 L=110 code 229460500
Digmesa turbine code NV99.099
Silicon tube 5x10 L=110 code 9972.125
Silicon tube 5x10 L=240 code 9972.123
TANK
PUMP
RELIEF AND COMPENSATION VALVE
Saeco INTERNATIONAL GROUP
CAFFETTIERA AUTOMATICA PRIMEA TOUCH PLUS
SCHEMA IDRAULICO
11002618

Primea Touch /Ring

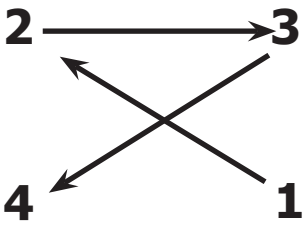

BREW UNIT
Mesh lined silicon tube 4.2x8.2 L=55 code 11002152
COFFEE DISPENSER
Silicon tube 5x10 60 Sh L=215 code 229365500
Dissipater for heater P124 code 11000765
Insulation covering for heater P124 code 11000805
ON ALL CONNECTIONS MARKED WITH * INSERT A CLAMP code 12000096
VALVE ANTIDRIPPUCCINO
Mesh lined silicon tube 4.2x8.2 L=240 code 11000756
Mesh lined silicon tube 4.2x8.2 L=210 code 11002153
HOT WATER TUBE
TO HEATER PIN
Mesh lined silicon tube 4.2x8.2 L=380 code 11000758
Mesh lined silicon tube 4.2x8.2 L=105 code 11000753
COFFEE HEATER
MILK DISPENSER
CHECK VALVE PRESBLOCK code 12000097
Mesh lined silicon tube 4.2x8.2 L=55 code 11002152
Mesh lined silicon tube 4.2x8.2 L=210 code 11002153
TO CONN. 3
TO CONN. 2
TO CONN. 4
TO CAPPUCCINO MIXER
Mesh lined silicon tube 4.2x8.2 L=290 code 11001208
TO LOWER BODY
TO CONN. 1
TO CONN. 5
Mesh lined silicon tube 4.2x8.2 L=55 code 11002152
Tee tube for milk delivery code 11000227
Cap for multi-way valve P124 code 11002148
MULTI-WAY VALVE
MILK TANK
Mesh lined silicon tube 4.2x8.2 L=190 code 11001206
Coupling for water drain P124 code 11001369
Digmesa turbine code NV99.099
Silicon tube 5x10 L=110 code 9972.125
Silicon tube 5x10 L=240 code 9972.123
ASSEMBLY PLATE
TANK
PUMP
RELIEF AND COMPENSATION VALVE
Saeco
SCALA
DISEGNATO
VERIF. / APPROV.
Mauro Tonelli
SOSTITUITO DAL
SOSTITUISCE IL
N° APPR. / N° MOD.
00
CODICE
11002619
DENOMINAZIONE
SCHEMA IDRAULICO
FORMATO A1 UNI 9300-76

CHAPTER 5
TROUBLESHOOTING

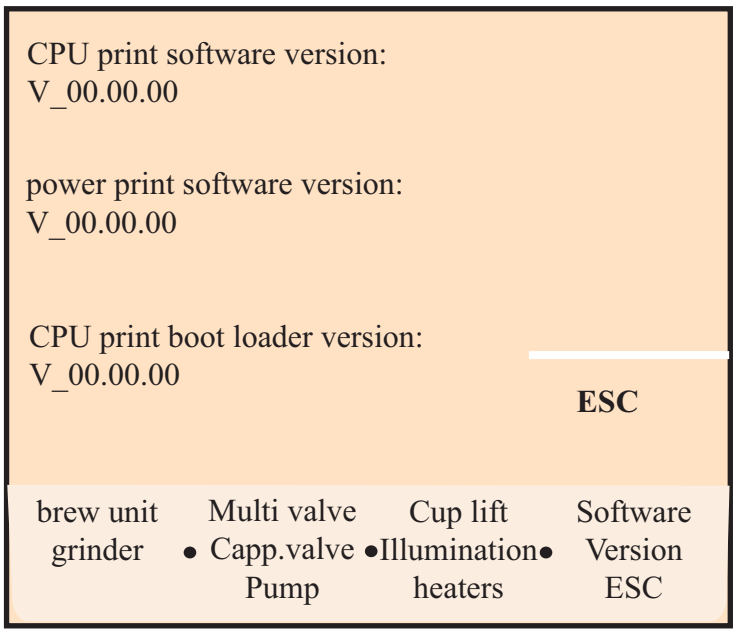
REV.00

5.1 Primea Touch Plus and Touch test functions

The functions of the second water boiler do not apply to the Touch model.

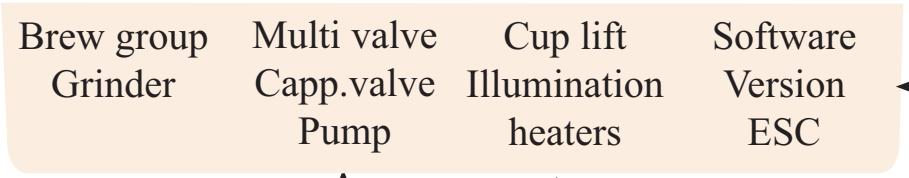


During the first 3 seconds after start-up of the appliance (or on exit from standby mode) the user can access test mode by pressing the keys in the sequence shown alongside.
In test mode, the machine functions can be checked, and are divided into four macro-groups.



The display shows:

- CPU card software version
- Power card software version
- Description of functions
- Esc key to exit Test Mode
- Version of boot loader on CPU



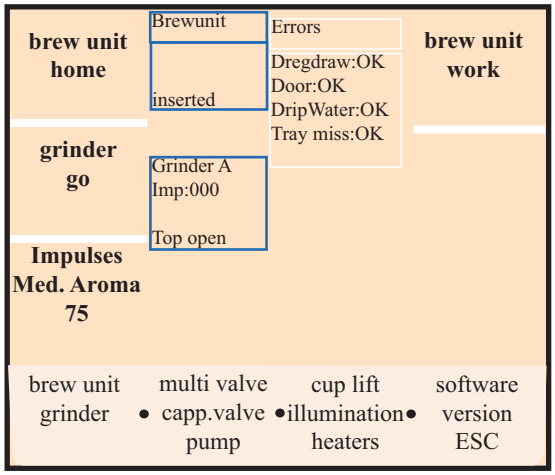
Shows soft-ware version

FUNCTION GROUP 1:
- Brew group (upwards/downwards)
- Grinder (function)

FUNCTION GROUP 2:
- Multi-way valve (positioning)
- Cappuccino valve (positioning)
- Pump (ON/OFF)

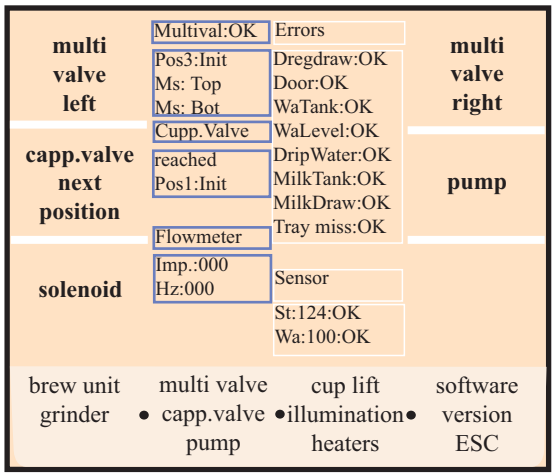
FUNCTION GROUP 3:
- Motor-driven tray (upwards/downwards)
- Cup illumination (ON/OFF)
- Cup warmer
- Boilers (ON/OFF)

5.1.1 Function group 1 - brew group, grinder, boiler power supply.



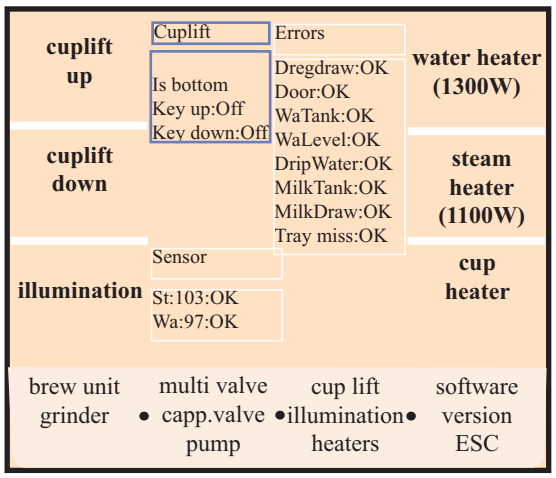
Dispensing head home: brew group in home position
Is home - rest position (Gearmotor micro.)
Brew group work: brew group in brewing position.
Is work - delivery position (gearmotor micro)
Brew group: inserted - unit inserted (unit micro)
Missing - unit missing (unit micro)
Grinder go: grinder running.
Grinder: Imp:000 - grinder pulses.
Top open - coffee container cover open.
Top closed- coffee container. cover closed.
Impulses Grinder pulse control (min.60 - max. 200) in steps of 05
Med. aroma sets quantity of ground coffee

Function group 2 - multi-way valve, cappuccino maker valve, pump



Multi valve left: Multi-way valve turns left
Multi valve right: multi-way valve turns right
Multival:OK multi-way valve OK or faulty (ER)
Pos1:Steam Steam setting (hot milk and froth)
Pos2:St.Pre. Steam pressure
before delivery of milk or froth
Pos3:Init Reset position - initialisation
Pos4:Coffee Coffee brew setting
Pos5:Hotwa. Hot water dispense setting
Pos6:Rinsing. Milk circuit autorinse position
Cupp.valve next: Cappuccino valve command
position
Pos1:Init Reset position - initialisation
Pos2:Foam Milk frothing setting
Pos3:Milk Hot milk dispense setting
pump: Pump
Turbo:OK Pump OK or faulty (ER)
Imp.:000 Turbine pulses (40 - 60 OK)
Hz: 000
Solenoid: Activation of electromagnet that closes the milk door

Function group 3 - drip tray, cup illumination, cup warmer, boiler supply



Cuplift up: Tray up movement
Cuplift down: Tray downwards movement
Cuplift:
Is bottom: Tray downwards (lower micro)
Is Top tray up (upper micro)
Key up: OFF ON/OFF-Up key pressed
Key down: OFF ON/OFF-Down key pressed
Illumination: cup illumination (press and hold)
Cup warmer cup warmer plate (press and hold)
Steam boiler: 1100W - powers steam boiler.
Water boiler: 1300W - powers water boiler.
Sensor:* Max 150

Key: In black: Keys
In blue: Check status
*** See next page (sensors)**

5.1.2 Microswitch and sensor check

Errors

(Errors)

Grounds drawer: (Dregdraw:)	Grounds drawer micro OK Drawer present ER drawer missing
Service: (Door:)	Door microswitch OK door closed ER door open
Water tank: (WaTank:)	Tank Micro OK tank engaged ER tank empty or in reserve (see diagnostics)
Water level: (WaLevel)	Water level capacitive sensor OK Water present ER Water low
Drip. tray: (DripWater:)	Drip tray capacitive sensor OK drip tray empty ER drip tray full
milk tank: (MilkTank)	Milk tank door micro OK milk tank door closed ER milk tank door open
Cappuccino valve: (Milk Draw:)	Milk tank + cappuccino valve micro OK milk tank and cappuccino valve inserted ER milk tank and/or cappuccino valve not found
Drip. tray: (no drip tray) (Tray miss:)	Drip tray micro OK tray present ER no tray

Sensors

St: steam	Steam boiler temperature sensor (Touch Plus only) Number: current temperature OK Sensor connection ok ER sensor shorted or disconnected
Wa: water	Water boiler temperature sensor Number: current temperature OK Sensor connection ok ER sensor shorted or disconnected

Errors

Dregdraw:OK
Door:OK
WaTank:OK
WaLevel:OK
DripWater:OK
MilkTank:OK
Milk Draw:OK
Tray miss:OK

Sensor

St:100:OK
Wa:100:OK

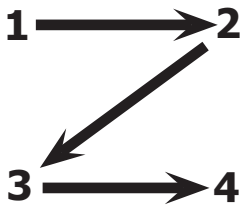
5.2 Touch Plus and Touch diagnosis function

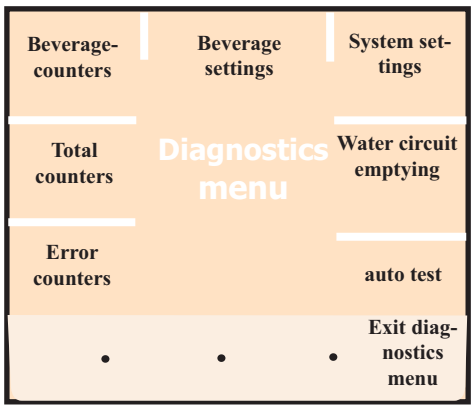
The functions of the second water boiler do not apply to the Touch model.

Procedure for access to diagnostics mode.

Turn the appliance off and then on again or exit standby mode to enter the diagnostics menu, according to the sequence shown in the figure.

When accessing the diagnostics menu, there is a timeout limit of 3 seconds between one selection and the next (1,2,3,4).





A window is displayed showing the following options:

- Beverage counters
- Total counters
- Error counters
- Beverage settings
- System settings
- Steamout (circuit emptying)
- Auto test
- Exit diagnostics menu

Description of options available

5.2.1 Beverage counters

Total hot milk beverages
- Total beverages — not modifiable
- Beverage dispense time (sec.) — not modifiable

Total latte macchiato beverages
- Total beverages — not modifiable
- Water used (ml.) — not modifiable

Total cappuccino beverages
- Total beverages — not modifiable
- Water used (ml.) — not modifiable

Total espresso macchiato beverages
- Total beverages — not modifiable
- Water used (ml.) — not modifiable

Total hot water beverages
- Total beverages — not modifiable
- ∇ Water used (ml.) — not modifiable

Total caffelungo beverages
- ∇ Total beverages — not modifiable
- ∇ Water used (ml.) — not modifiable

Total coffee beverages
- ∇ Total beverages — not modifiable
- ∇ Water used (ml.) — not modifiable

Total espresso beverages
- ∇ Total beverages — not modifiable
- ∇ Water used (ml.) — not modifiable

Total pre-ground coffee beverages
- ∇ Total beverages — not modifiable
- ∇ Water used (ml.) — not modifiable

Total all beverages
- ∇ Total beverages — not modifiable

5.2.2 Total counters

Water used since production (ml.)	not modifiable
Water used since last descaling (ml.)	modifiable
Water used since last descaling message (ml.)	not modifiable
Water used since last descaling (ml.)	not modifiable
∇ Water used counter (last) 0 ml.	
∇ Water used counter (second last) 1 ml.	
∇ Water used (third to last) 2 ml.	not modifiable
Total descaler used	not modifiable
Water used by filter since last reset (ml.)	modifiable
Water used with water filter enabled since production (ml)	not modifiable
Number of descalings (cycles)	not modifiable
Number of dispensing head cleaning cycles	not modifiable
Number of milk circuit rinse cycles	not modifiable
Number of cappuccino valve cleaning cycles	not modifiable
Water filters used since production (cycles)	not modifiable
Number of dispensing head removals (cycles)	not modifiable
Beverages up to descaling (cycles)	modifiable
Machine active time (sec.)	not modifiable
Temporary descaling counter	not modifiable
Water circuit emptying counter (cycles)	not modifiable

5.2.3 Error counters (access submenu)

The machine records the followingerrors (see also section 5.3)

01) Grinder 1 blocked
02) Grinder 2 blocked
03) Dispensing head blocked; up command
04) Dispensing head blocked; down
05) Pump flow rate error (fill circuit)
07) Multivalve blocked
08) Capp. valve. blocked
09) Powercomm error (communication error with power card)
10) Water boiler sensor disconnected
11) Water boiler sensor short circuited
12) Steam boiler sensor disconnected
13) Steam boiler sensor short circuit
14) Water boiler disconnected
15) Steam boiler disconnected
16) Both dispensing head microswitches active
17) EEPROM read and write error
18) Real time clock oscillator stopped
19) No zero crossing in mains supply
20) Cuplift both microswitches active

All these errors display the following submenu
- ∇ Production errors — not modifiable
- ∇ Errors since last service — resettable – modifiable
- ∇ Current — resettable – modifiable

Ringbuffer errors: the last 20 errors are saved.
- ∇ Error 1/20,2/20,3/20,4/20,5/20,6/20,7/20,8/20,9/20,10/20,11/20,12/20,13/20,14/20,15/20, 16/20,17/20,18/20,19/20,20.

5.2.4 Ring buffer repair code

Buffer history repair

This area records interventions of the Service Centres (up to a maximum of 10).
The Service Centre enters the fault codes **via PC** as transmitted by Saeco I.G. (e.g: CLD01)

1. group errors
1. code errors
1. day errors
1. month errors
1. year errors

2.....

10. group errors
10. code errors
10. day errors
10. month errors
10. year errors

Machine status (all modifiable)

- **1** Prime circuit (yes/no)
- **2** Water filter (not inserted/inserted)
- **4** Unit full (yes/no)
- **8** Display add coffee grinder 1 (yes/no)
- **16** Display add coffee coffee grinder 2 (yes/no)
- **32** Time format (am/pm)
- **64** Standby (yes/no)
- **128** Rinse (enable/disable)
- **256** Cup illumination (enable/disable**)**
- **512** Grinder 1 out of coffee (warning message management) sec.
- **1024** Grinder 2 out of coffee (warning message management sec.
- **2048** Milk circuit rinse required (yes/no)
- **4096** Demo mode (disable/enable) command
- **16384** Display icons (yes/no)
- **32768** Warning tone ready (enable/disable)
- **65536** Milk quality warning (enable/disable)
- **131072** Key press tone (enable/disable)
- Water filter activation suspended (yes/no)
- Language selection on power-on (yes/no)
- Milk circuit rinse

5.2.5 Beverage settings

SYSTEM SETTINGS parameters	Unit of measurement	Settings range	Default value
HOT MILK			
Beverage data modified by user		yes/no	No
Milk time	seconds	0 ... 40	0
Froth time	seconds	0 ... 40	25
LATTE MACCHIATO			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	medium
Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	135
Milk time	seconds	0 ... 40	0
Froth time	seconds	0 ... 40	27
CAPPUCCINO			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	medium
Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	135
Milk time	seconds	0 ... 40	0
Froth time	seconds	0 ... 40	22
ESPRESSO MACCHIATO			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	medium
Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	135
Milk time	seconds	0 ... 40	0
Froth time	seconds	0 ... 40	5
HOT WATER			
Beverage data modified by user		yes /no	No
Water	turb. pulses.	50 ... 450	210
CAFFE' LUNGO			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	medium
Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	440
COFFEE'			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	medium

Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	280
ESPRESSO			
Beverage data modified by user		yes /no	No
Temperature		low, high, medium	high
Aroma		medium, light, preground, strong	medium
Grinding ratio	percentage	0 ... 100	100
Pre-brewing		disabled, strong, normal	normal
Water	turb. pulses.	50 ... 450	165
EXTRA MILK			
Time	seconds	0 ... 40	5

5.2.6 System settings

SYSTEM SETTINGS parameters	Unit of measurement	Settings range	Default value
SETTING			
Water boiler temperature enabled	°C	70 ... 150	130
Water boiler temperature disabled	°C	70 ... 150	115
Steam boiler temperature enabled	°C	70 ... 150	145
Steam boiler temperature disabled	°C	70 ... 150	130
Average temperature in cup	°C	70 ... 150	78
Last use of dispensing head	min/sec	0 - 59; 0 - 59	0
Last use of dispensing head	d/h	1-7; 0-23	0
BEVERAGE PARAMETERS			
Hot water	flow rate (l/h)	5 ... 31	16
touch : hot mik (pulse lenght)	line-period	2 ... 30	5 (=100ms / 50Hz)
touch : hot milk (pulse period)	20ms - steps	2 ... 126	60(=1200ms)
plus + duo : hot milk (steam pressure time)	seconds	0 ... 40	6
plus + duo : hot milk (pulse lenght)	line-period	2 ... 30	4(=80ms / 50Hz)
plus + duo : hot milk (pulse period)	20ms - steps	2 ... 126	64(=1280ms)
Milk level sensor delay times (do not modify)	seconds	0 ... 20	4
MILK CIRCUIT RINSE			
milk circuit rinse new multiway valve (hot water)	flow rate (l/h)	5 ... 31	16
milk circuit rinse new multiway valve (pulse lenght)	line-period	50 ... 450	150(=3000ms/50Hz)
milk circuit rinse old multiway valve (dispense time)	seconds	0 ... 40	10
milk circuit rinse old multiway valve (steam pressure time)	seconds	0 ... 40	6
milk circuit rinse old multiway valve (pulse lenght)	line-period	2 ... 30	2 (= 40ms / 50Hz)
milk circuit rinse old multiway valve (pulse period)	20ms - steps	2 ... 126	32 (=640ms)
MILK CIRCUIT CLEANING			
Milk circuit (first use in day)	day	1-31	1
Milk circuit (first use in month)	month	1-12	1
Milk circuit (first use in year)	year	2005-2099	2099
Milk circuit cleaning (status)		complete	0
Milk circuit cleaning (dispense time)		0 ... 45	45
Milk circuit cleaning (steam pressure time)		0 ... 40	6
Milk circuit cleaning (pulse length)	line-period	2 ... 30	2 (= 40ms / 50Hz)
Milk circuit cleaning (pulse period)	20ms - steps	2 ... 126	32 (=640ms)
Milk circuit cleaning (detergent wait time)	minutes	0 ... 60	1
DESCALING STATUS			
Status	complete, dec. rinse start, dec. finished, normal quantity, start. quantity		
DISPENSING HEAD CLEANING			
Status	complete, finished dispensing, quantity 4-3-2-1 dispensed		
Machine status *		complete	---
Language		0 ... 11	0
Water hardness	hardness setting	1 ... 4	3
Display brightness (colour)	brightness setting	50 ... 100	80
Display brightness (black)	brightness setting	2690 ... 2890	2740
Cup warmer	disabled, always on, off, in standby		disabled

Grinder adjustment A (med. aroma)	grinder pulses	60 ... 200	75
Grinder adjustment B (med. aroma)	grinder pulses	60 ... 200	60
Off time	hours and minutes	0-3; 0-59	3
Calendar used**	days, hours, seconds	complete	0
Production date	dd/mm/yy	not modifiable	not modifiable
Service date	dd/mm/yy	complete	0
Empty milk alert	minutes	0 ... 60	20
Milk rinse warning time	minutes	5 ... 240	20
Power board status		complete	17
Aqua Prima water filter	dd/mm/yy	complete	2006
Aqua Prima water filter - last appliance start-up	dd/mm/yy	complete	2006
Stop coffee grounds	no. grounds	0 ... 25	24
Coffee grounds counter	no. grounds	0 ... 25	24
Water reserve limit	turbine pulses	0 ... 2000	750
Water reserve counter	turbine pulses	0 ... 2000	0
Software version	cpu print v_--.--.-- cpu bootloader print v_--.--.-- power print v_--.--.--		
Serial number			complete

* Enter machine status

** The day, hours and minutes of machine start-up and shutdown can be programmed in three time bands.

5.2.7 Emptying water circuit

This option must be run when the coffee maker is delivered by courier in periods subject to winter temperatures.
This function prevents damage to the appliance caused by very low temperatures.
The cycle empties the water circuit by means of the following sequence of operations performed automatically.

∇ Selection of functions in diagnostics menu.

1. The multivalve must be in coffee position.
2. Both boilers reach the temperature of 130°C
3. The brew group stops in the brew position (UP) for 3 sec.
4. The unit returns to the home position (DOWN)
5. The multivalve sets to the hot water position for 1 sec.
6. The multivalve sets to the steam position for 1 sec.

5.2.8 Auto test

On selection of this function, an automatic test is run on the machine functions, with results reported on the display. Before starting the test, all drawers and the tank must be inserted, all service doors closed and the relative recipients must be filledwith water and coffee.

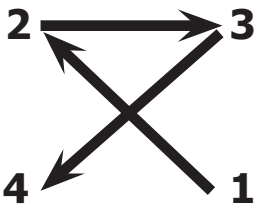
Test type	Description	Message if function OK	Error message
2.7.1 External ram test	Check CPU ram	successful !	failed !
2.7.2 flash test	Check CPU flash memory	successful !	failed !
2.7.3 Eeprom test	Check non volatile memory with machine settings	successful !	failed !
2.7.4 rtc test	Check real time clock	successful !	failed !
2.7.5 Cup lift test upwards	The motor-driven tray moves up and engages the upper microswitch	successful !	failed !
2.7.6 cup lift test downwards	The motor-driven tray moves down and engages the lower microswitch	successful !	failed !
2.7.7 Capp valve test	Check correct operation of the cappuccino valve and relative microswitch	successful !	failed !
2.7.9 multivalve test	Check correct operation of multivalve and relative microswitches	successful !	failed !
2.7.10 pump test	Check pump and turbine operation. WARNING: hot water delivered	successful !	failed !
2.7.11 Grinder test	Check grinderand coffee presenceè, as well as hall sensor which counts pulses.	successful !	failed !
2.7.12 Brew group test upwards	Check of ascent of unit and activation of the upper limit microswitch	successful !	failed !
2.7.13 Brew group downwards	Check of descent of unit and activation of the lower limit microswitch.	successful !	failed !
2.7.14 Water heater test	Check and inspection of power to coffee/ water boiler, if the sensor detects increase in temperature.	successful !	failed !
2.7.15 Steam heater test (Touch Plus only)	Check and inspection of power to steam boiler, if the sensor detects increase in temperature.	successful !	failed !

At the end of the automatic cycle, you can "repeat the automatic test" or "exit the test" as required.

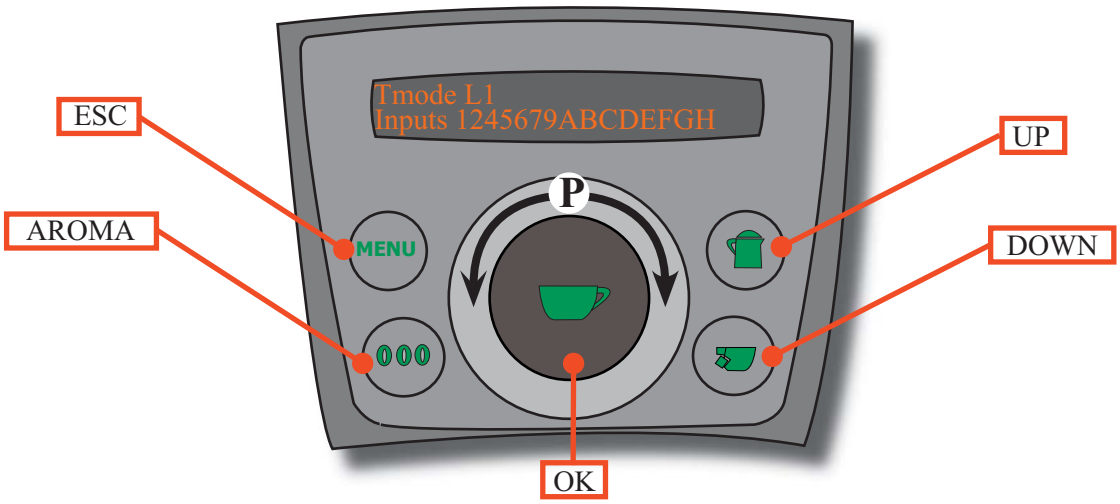
Exit diagnostics

On selection of this option, the system exits the diagnostics menu and returns to the normal machine functions.

5.3 Ringtest function



During the first 3 seconds after start-up of the appliance (or on exit from standby mode) the user can access test mode by pressing the keys in the sequence shown alongside.
Turn the touch-ring (P) (I-Pod) for access to each different level.



Keyboard

Key test

MENU	The display indicates no. 1
AROMA	The display indicates no. 2
OK	The display indicates no. 3
UP	The display indicates no. 5
DOWN	The display indicates no. 6
UPWARD	The display indicates no. 9 (motor-driven tray capacitive key up).
DOWNWARD	The display indicates no. A (motor-driven tray capacitive key down)

Level 1

Microswitch and INPUT - OUTPUT sensor control

- BREWUNIT (unit located) The display indicates no. 1

- WATERLEVEL (water level detection) The display indicates no. 4

- BU_BOOR (close service door) The display indicates no. 5

- DREGDRAWER (dreg drawer located) The display indicates no. 6

- DRIPTRAY_PRES (drip tray located) The display indicates no. 7

- DRIPTRAY_LEVEL (drip tray level detected) The display indicates no. 8

- CUPLIFT_TOP (stroke end position motor-driven tray upper sensor). The display indicates C

- CUPLIFT_BOTTOM (stroke end position motor-driven tray lower micro) The display indicates D

- CAPP_DOOR_CLOSED (milk tank door closed). The display indicates E

- CAPP_DOOR_CLOSED+CAPP_PRES (door closed milk tank and cappuccino valve. The display indicates F

- COFFEE_BEANS_DOOR_CLOSED (coffee container lid closed). The display indicates G

- TANK_PRES (water tank) The display indicatesH

Level 2
Check gearmotor moving the unit

- PRESS UP (unit up) The display indicates no. 5 when the upper micro of the gearmotor is enabled.

- PRESS DOWN (unit down) The display indicates no. 6 when the lower micro of the gearmotor is enabled. Torque absorption is indicated during movement (max 350 mA)

No. 3
Test grinder and pump

- PRESS ESC KEY (the pump starts). The display indicates turbine pulses

- PRESS OK KEY (excites milk tank solenoid valve). The display indicates SOLENOID ACTIVATED and no.3

- PRESS AROMA KEY (grinder starts)

- PRESS UP OR DOWN KEY (to vary the aroma)

Level 4
Test water boiler and cup warmer

- PRESS THE UP KEY (water boiler is filled). The display shows the change to the temperature.

- PRESS THE ESC KEY (cup warmer comes on) You can feel the cup warmer heating up

Level 5
Test multivalve

- PRESS THE UP KEY (position changed in clockwise direction)

- PRESS THE DOWN KEY (the position changes in anticlockwise direction)

- PRESS THE ESC KEY (returns to water position)

Level 6
Test cappuccino maker

- PRESS THE UP KEY (moves to position 0)

- PRESS THE DOWN KEY (moves to position 1)

Level 7
Motor-driven tray test

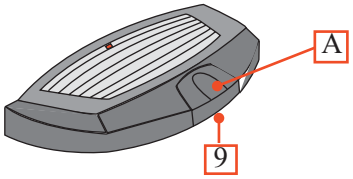
- PRESS THE UP KEY (lower capacitive key) KEY 9

- PRESS THE DOWN KEY (upper capacitive key) KEY A
  The display indicates D = lower stroke end position micro
  The display indicates C = upper stroke end position micro
  The display indicates A = upper capacitive key
  The display indicates 9 = lower capacitive key

Level 8
Display contrast test

- PRESS THE UP KEY (increase contrast)

- PRESS THE DOWN KEY (reduce contrast)



Level 9
Display backlighting test

- PRESS THE UP KEY (increase intensity)

- PRESS THE DOWN KEY (reduce intensity)

Level B
This procedure restores the default parameters of the appliance with the exception of:

- Coffees made since production counter
- Errors since production counter
- Descaler used
- Water used since last descaling, from the last to the second last, from the second last to the third from last, from the third from last to the fourth from last
- Number of descalings performed
- Number of clean cycles run on unit
- Number of times unit has been removed
- Seconds counter for total time machine switched on

Level C
Language test

- PRESS THE UP OR DOWN KEY (select the sequence of messages in each language)

- PRESS OK KEY (select language)

LEVEL D
Test steamout

-PRESS OK KEY (prepares appliance for packaging)
Empties water circuit and raises motor-driven tray.

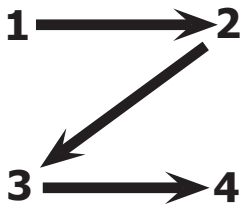
LEVEL E
- EXIT

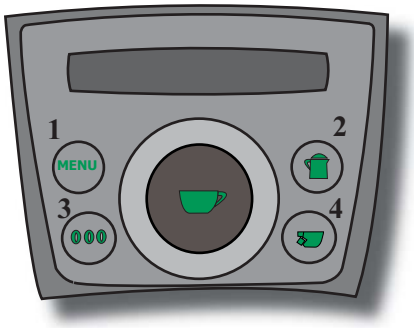
5.4 Ring diagnosis function

Procedure for access to diagnostics mode.

Turn the appliance off and then on again or exit standby mode to enter the diagnostics menu, according to the sequence shown in the figure.

When accessing the diagnostics menu, there is a timeout limit of 3 seconds between one selection and the





A window is displayed showing the following options:

- Beverage counters
- Total counters
- Error counters
- Beverage settings
- System settings
- Exit diagnostics menu

Description of options available

5.4.1 Beverage counters

1.1 Total espresso beverages	
525 Total beverages	not modifiable
526 Water used (ml.)	not modifiable
1.2 Total coffee beverages	
562 Total beverages	not modifiable
563 Water used (ml.)	not modifiable
1.3 Total caffè lungo beverages	
527 Total beverages	not modifiable
528 Water used (ml.)	not modifiable
1.4 Total latte macchiato beverages	
1.4.1 Total beverages	not modifiable
1.4.2 Water used (ml.)	not modifiable
1.5 Total cappuccino beverages	
1.5.1 Total beverages	not modifiable
1.5.2 Water used (ml.)	not modifiable
1.6 Total espresso macchiato beverages	
1.6.1 Total beverages	not modifiable
1.6.2 Water used (ml.)	not modifiable
1.7 Total hot milk beverages	
1.7.1 Total beverages	not modifiable
1.7.2 Dispense time (sec.)	not modifiable
1.8 Total hot water beverages	
1.8.1 Total beverages	not modifiable
529 Water used (ml.)	not modifiable

1.9	Total all beverages	not modifiable
1.10	Total descaler used (ml)	not modifiable

5.4.2 Total counters

2.1	Water used since production (ml.)	not modifiable
2.2	Water used since last descaling (ml.)	not modifiable
2.3	Water used since second last descaling (ml.)	not modifiable
2.4	Water used since third from last descaling (ml.)	not modifiable
2.5	Number of descalings (cycles)	not modifiable
2.6	Number of dispensing head cleaning cycles	not modifiable
2.7	Number of cappuccino valve cleaning cycles	not modifiable
2.8	Number of dispensing head removals (cycles)	not modifiable
2.9	Machine active time (sec.)	not modifiable

5.4.3 Error counters (access submenu)

The appliance records the following errors

3.1) Grinder 1 blocked
3.3) Dispensing head blocked; up command (Work)
3.4) Dispensing head blocked; down command (Home)
3.5) Water circuit blocked
3.6) Multivalve error
3.8) Cappuccino valve blocked
3.10) Boiler sensor disconnected
3.11) Water boiler sensor shortcircuited
3.14) Water boiler temperature error
3.16) Both microswitches activated on dispensing head
3.17) Memory error
3.18) Clock error
3.19) No zero crossing
3.20) Cuplift error (motor-driven tray)

All these errors display the following submenu

∇	Production errors	not modifiable
∇	Errors since last service	resettable – modifiable

3.21) Error history: the last 20 errors are savedand coded from 3.21.1 to 3.21.20

5.4.4 Ring product settings

SYSTEM SETTINGS parameters	Unit of measurement	Settings range	Default value
4.1 ESPRESSSO			
4.1.1 Temperature		low, high, medium	medium
4.1.2 Aroma		medium, light, preground, strong	strong
4.1.3 WATER	turb. pulses.	70 ... 450	STD 165 IT 110
4.2 COFFEE			
4.2.1 Temperature		low, high, medium	medium
4.2.2 Aroma		medium, light, preground, strong	medium
4.2.3 WATER	turb. pulses.	70 ... 450	STD 280 IT 200
4.3 CAFFE LUNGO			
4.3.1 Temperature		low, high, medium	medium
4.3.2 Aroma		medium, light, preground, strong	medium
4.3.3 WATER	turb. pulses.	70 ... 450	STD 440 IT 330
4.4 ESPRESSO MACCHIATO			
4.4.1 Temperature		low, high, medium	medium
4.4.2 Aroma		medium, light, preground, strong	medium
4.4.3 WATER	turb. pulses.	70 ... 450	STD 165 IT 110
4.4.4 Milktime	seconds	2 ... 50	STD 11 IT 6
4.5 LATTE MACCHIATO			
4.5.1 Temperature		low, high, medium	medium
4.5.2 Aroma		medium, light, preground, strong	medium
4.5.3 WATER	turb. pulses.	70 ... 450	STD 280 IT 200
4.5.4 Milk time	seconds	2 ... 50	20
4.6 CAPPUCCINO			
4.6.1 Temperature		low, high, medium	medium
4.6.2 Aroma		medium, light, preground, strong	medium
4.6.3 WATER	turb. pulses.	70 ... 450	STD 280 IT 200
4.6.4 Milk time	seconds	2 ... 50	18
4.7 HOT MILK			
4.7.1 Milk time	seconds	2 ... 50	24
4.8 HOT WATER			
4.8.1 Water	turb. pulses.	70 ... 450	330

SYSTEM SETTINGS parameters	Unit of measure	Settings range	Default value
SETTING			
Water boiler temperature enabled	°C	70 ... 150	130
Water boiler temperature disabled	°C	70 ... 150	115
Steam boiler temperature enabled	°C	70 ... 150	150
Steam boiler temperature disabled	°C	70 ... 150	130
Normal cup temperature	°C	70 ... 150	78
BEVERAGE PARAMETERS			
Hot water	flow rate (l/h)	5 ... 31	18
Hot milk (pulse length)	line-period	1 ... 9	5 (=100ms/50Hz)
Hot milk (pulse period)	20ms - steps	5 ... 250	60(=1200ms)
MILK CIRCUIT RINSE			
Dispense time	seconds	0 ... 40	10
Pulse lenght	line-period	1 ... 3	1 (= 20ms / 50Hz)
Pulse period	20ms - steps	5 ... 250	15 (=300ms)
MILK CIRCUIT CLEANING			
Milk circuit cleaning (dispense time)		0 ... 40	10
MILK CIRCUIT CLEANING MESSAGES			
cleaning time	seconds		30
days before notification	days		14
days till block	days		21
GRINDER SETTING			
medium aroma	pulses	60 ... 200	100
Water reserve limit	turbine pulses	0 ... 2000	750
Stop coffee grounds	nr. grounds	0 ... 25	24
Coffee grounds counter	nr. grounds	0 ... 25	24
Descaling counter	litres	0	300
Serial number			

Code	Applicable models: Primea-Odea-Talea	Brief description	Description
01	All models	Grinder 1 blocked	The grinder is blocked (burrs jammed or sensor not reading properly).
02	Primea	Grinder 2 blocked	The grinder is blocked (burrs jammed or sensor not reading properly).
03	All models	Dispensing head blocked in work position	Microswitch not released in up position after 3", torque error trying to move down, descent time out exceeded
04	All models	Dispensing head blocked in home position	Microswitch not released in down position after 3", torque error trying to move up, ascent time out exceeded
05	All models	Water circuit blocked	No water in turbine
06	Primea	Multivalve error	Multivalve è blocked
08	Primea	Cappuccino valve blocked	The cappuccino valve has failed to reset becauseit has failed to excite the microswitch.
09	Primea	Communication error between CPU and POWER	Communication interrupted for more than 2 seconds
10-11	All models	Various sensor errors	Water boiler sensors shorted or in open circuit
12-13	Primea	Various sensor errors	Steam boiler sensors shorted or in open circuit
14-15	All models	Various temperature errors	Boiler temperatures out of control
16	All models	Both microswitches activated on dispensing head	The work and home microswitches have both been activated
17	All models	Memory error	Impossible to read or write to e2prom
18	All models	Clock error	Memory defect or impossible to set
19	All models	No zero crossing	No zero crossing on card, could be caused by power card
20	All models	Cup lift error	The two stroke end position microswitches are activated at the same time

On models in the new Primea, Talea and Odea ranges, errors recorded can be viewed on the display (during diagnosis) or on a PC (with programmer). The following are saved:

A) The last 20 errors to be recorded

B) Total number of errors (not all models)

- Since production (total)
- Since last service (partial)
- Current

5.6 Problems, causes, remedies

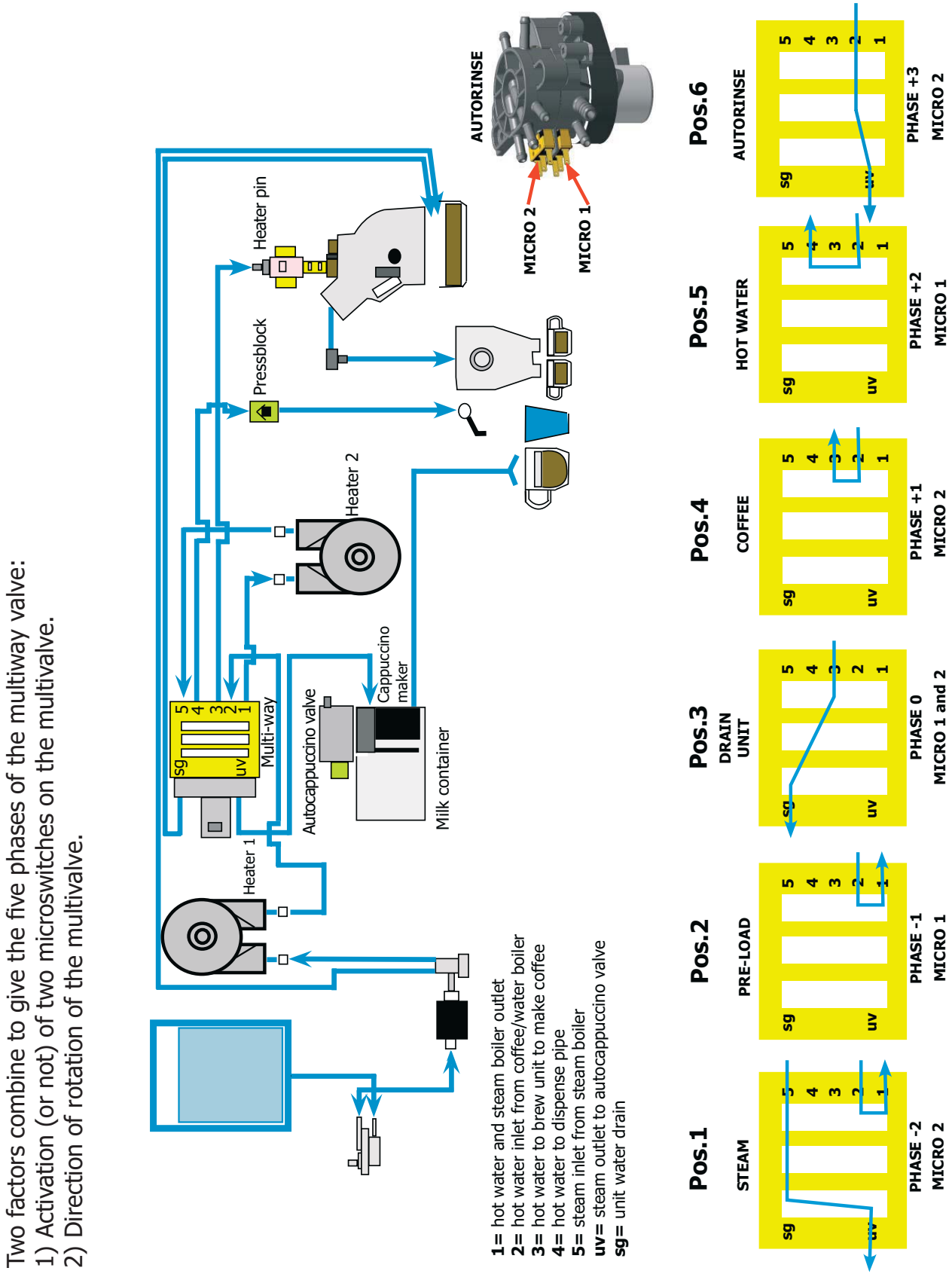
HELP MESSAGES DISPLAYED	HOW TO RESET MESSAGE
Turn the appliance off and on to solve the problem	Switch off and after 30 sec. turn on the appliance to restore normal operating conditions.
Call the Service Centre	Problem requiring assistance of Service Centre
Insert drip tray	Insert drip tray
Close coffee bean hopper lid	Close the coffee bean hopper lid to enable delivery of any beverage.
Insert ground coffee	This message guides the user when this type of coffee has been selected during personalised beverage programming.
Insert dispensing head	Insert dispensing head in seat
Insert coffee grounds drawer	Insert coffee grounds drawer
Empty coffee grounds drawer	Remove coffee grounds drawer and empty. N.B: The coffee grounds drawer must only be emptied when the appliance is switched on. The drawer must be removed for at least 5 seconds. If the drawer is emptied when the appliance is switched off the message is not reset.
Close side door	Close service door.
Fill water tank	Fill tank
Empty drip tray below dispensing head	Empty drip tray
Insert milk tank	Insert container in milk compartment
Prime circuit	Start filling water circuit automatically. The appliance will automatically try tofill the circuit 5 times; if it fails, contact the Service Centre.
The descaling cycle did not run correctly	Repeat the operation as described in the relative chapter in the instruction booklet.
Replace Aqua Prima filter	This message is only displayed if the filter control is enabled (see instruction booklet). Replace the filter if: 1) 60 litres of water have been dispensed. 2) 90 days have elapsed since installation. 3) 20 days have elapsed since the coffee maker was last used.
The cleaning cycle did not run correctly	Repeat the operation as described in the relative chapter in the instruction booklet.
Insert cappuccino valve	Insert cappuccino valve in milk compartment
Rinse milk tank	Clean container after use
Descale appliance	Run descaling cycle
Standby	Press " start"

CHAPTER 6
OPERATING LOGIC

REV.00

6.1 Multi-way valve

Touch Plus multi-way valve opening operating diagram



Two factors combine to give the five phases of the multiway valve:
1) Activation (or not) of two microswitches on the multivalve.
2) Direction of rotation of the multivalve.

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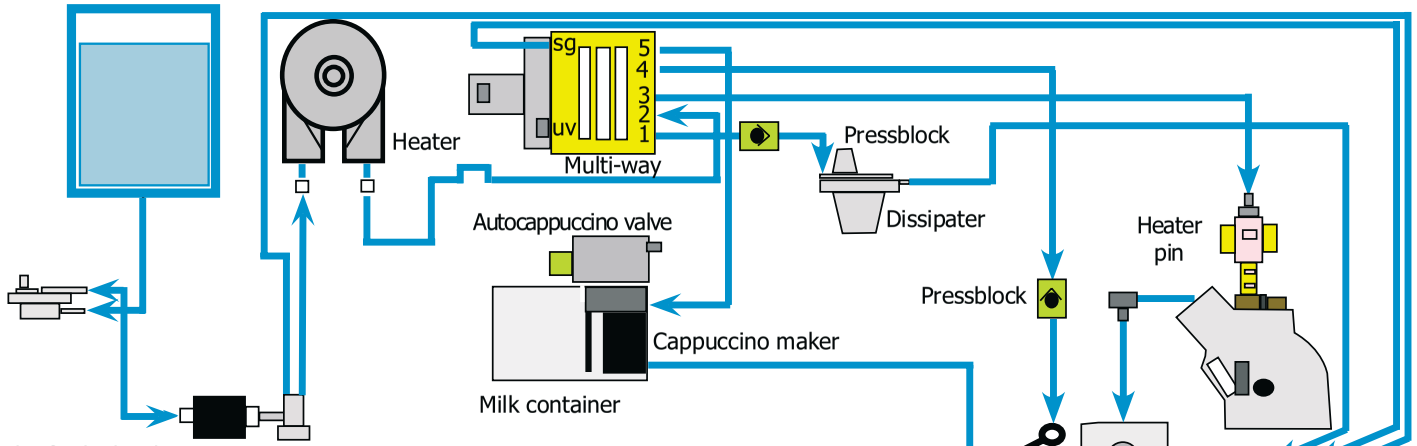
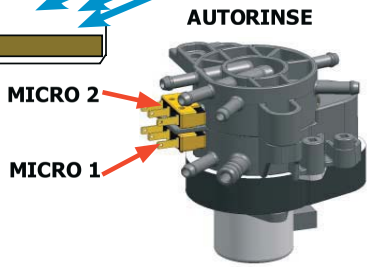
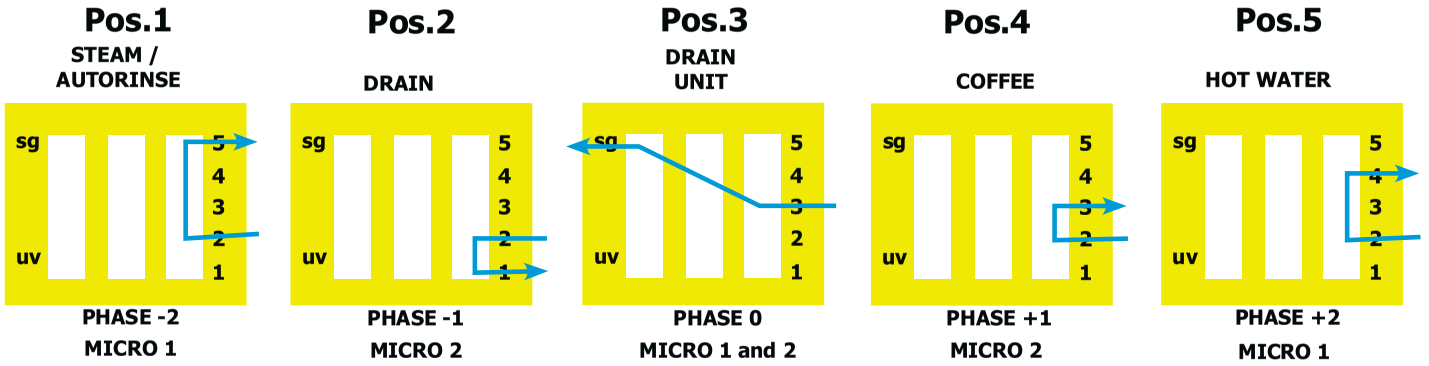
1) Activation (or not) of two microswitches on the multivalve.
2) Direction of rotation of the multivalve.



1= steam outlet for boiler drainage
2= hot water inlet from water boiler
3= hot water to brew unit to make coffee
4= hot water to dispense pipe
5= steamout
uv= outlet closed
sg= unit water drain





BOILER DRAIN

After steam production (e.g: cappuccino) the boiler drain discharges steam into the drip tray with cooling via the dissipater.
The boiler is re-loaded to enable delivery of coffee or water.

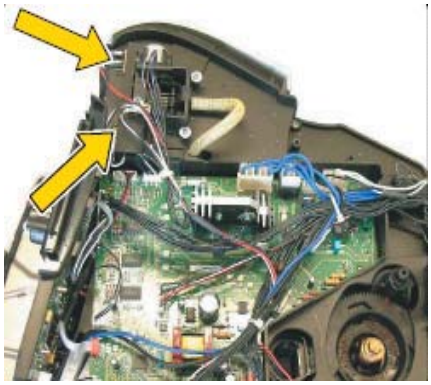
6.2 Autocappuccino

The autocappuccino system enables the automatic preparation of cappuccino, latte macchiato, caffè macchiato and hot milk.

The milk tank (A), with a capacity of approx. 0.4 l. is removable to enable storage of the contents in the fridge when not used.

At the time of cappuccino preparation, the milk is collected directly from the milk tank (A), whisked by the action of the steam and delivered to the relative dispensing head.

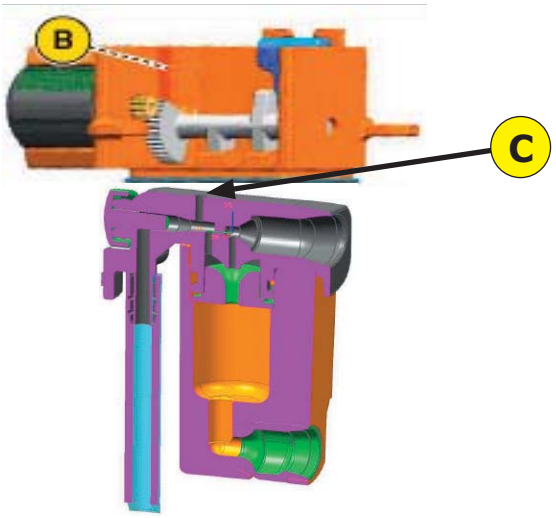
The holes that deliver the milk enable simultaneous preparation of two cappuccinos



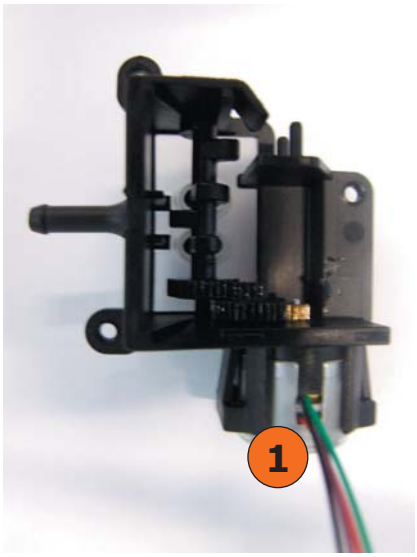
Two microswitches, when activated, indicate:
1. Closure of the milk tank
2. Presence of milk tank and cappuccino valve

After delivery of a milk-based product, a circuit rinse is proposed (if it is not rinsed within 20 minutes, the appliance blocks all milk-based beverages).

If no milk-based beverages have been dispensed in the last 14 days, the appliance requests that the milk circuit is cleaned with a cleaning tablet / powder. (if this is not done, after 21 days all products are blocked).

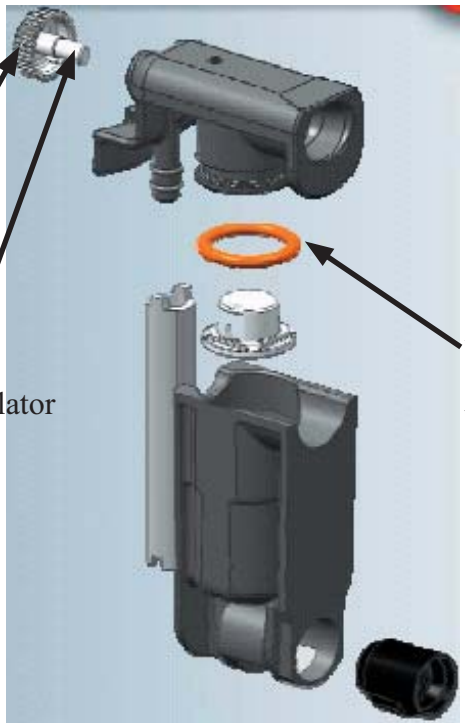


The system consists of a motor-driven valve (B), which opens orifice (C) to allow air to enter and remove milk from inside the cappuccino maker.



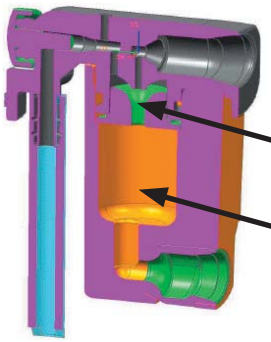
Motor (1) is a stepper motor which resets the position after each beverage is dispensed.

Air/milk flow regulator which can be turned to clean the surface of the hole or removed for a more thorough clean.



Air flow/milk regulator

The seal between the body of the cappuccino valve and the dispensing head is guaranteed by an O-ring.



The Venturi effect is generated by a special thermoplastic component.

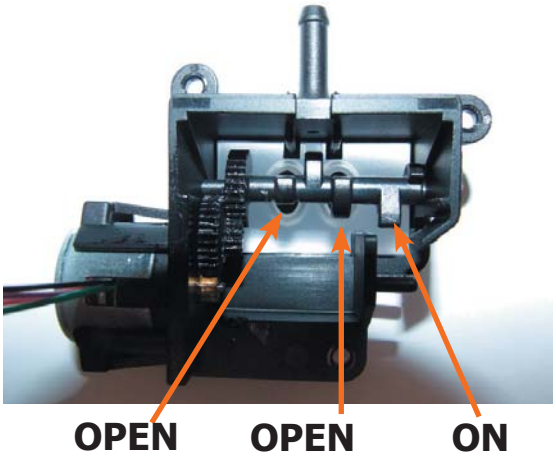
The post-chamber controls the flow of milk, eliminating any spray during milk delivery.

Cappuccino valve positions and functions

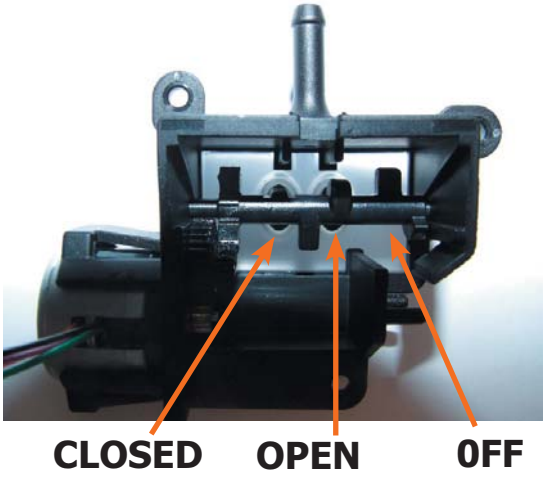
The stepper motor has two positions,

- INIT (REPOSITIONING)
- MILK D. MILK DRAIN)

POSITION 1
INIT
REPOSITIONING)



POSITION 2
MILK DRAINAGE
MILK DRAIN)

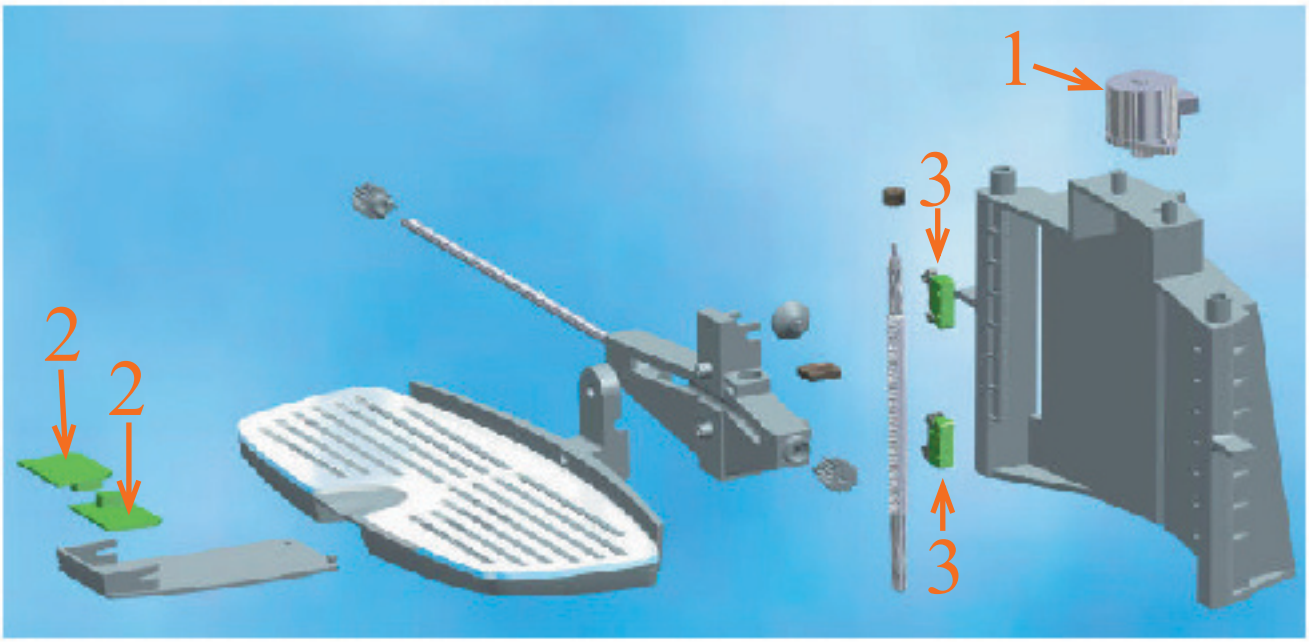


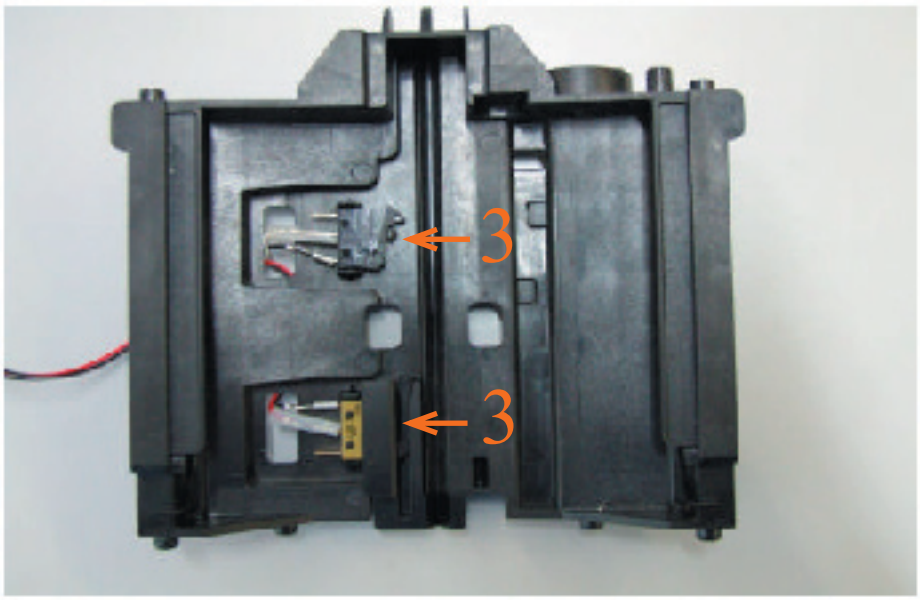
POSITIONS	Position 1 INIT	Position 2 MILK DRAINAGE
AIR INLET (VERNAY)	open	closed
MILK DRAIN	open	open
MICRO	on	disabled

The circuit pressure is discharged after each beverage is dispensed

6.3 Motor-driven tray

The movement of the motor-driven tray is mechanical by means of a stepper motor (1) in 24V DC, controlled by two capacitive touch sensors (2) located at the front of the tray.
The two microswitches (3) are for the limit switch, and operation can be checked in test mode (see Section 5.1)

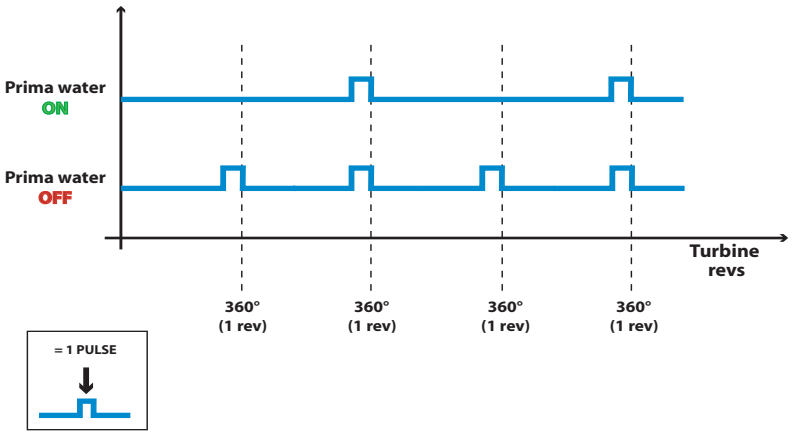




6.4 Aqua Prima

Operating logic with "AQUA PRIMA" filter for Primea Ring

When use of the "aqua prima" filter is selected on the user menu or via the control panel, the system water count logic is as follows:
If the "aqua prima" function has been **enabled,** the electronics perform a pulse count of the turbine, recording **one pulse every 2 revolutions.**
If the "aqua prima" function has been **disabled,** the electronics perform a pulse count of the turbine, recording **one pulse every revolution.**
The graph below illustrates this function:



Descaling			
Hardness	**Water hardness**	**Descaling frequency**	**Descaling frequency when usingAqua Prima**
1	Soft water (up to 7ºdH)	Approx. every 3 months/ 120 l (31.6 Gal)	Approx. every 3 months/ 240 l (63.2 Gal)
2	Medium water (7º-14ºdH)	Approx. every 2 months/ 90 l (23.75 Gal)	Approx. every 2 months/ 180 l (47.4 Gal)
3	Hard water (15º-21ºdH)	Approx. every 6 weeks/ 60 l (15.8 Gal)	Approx. every 6 weeks/ 120 l (31.6 Gal)
4	Very hard water (over 21ºdH)	Approx. every 4 weeks/ 30 l (7.9 Gal)	Approx. every 4 weeks/ 60 l (15.8 Gal)

Operating logic with "AQUA PRIMA" filter for Primea Ring Duo - Touch Plus and Touch

When the "Aqua Prima" is enabled, an additional 30l of water can go through before descaling is required (see table)

DESCALING			
Hardness	**Water hardness**	**Descaling frequency**	**Descaling frequency when usingAqua Prima**
1	Soft water (up to 7ºdH)	Approx. every 3 months/ 120 l (31.6 Gal)	Approx. every 3 months/ 150 l (39.5 Gal)
2	Medium water (7º-14ºdH)	Approx. every 2 months/ 90 l (23.75 Gal)	Approx. every 2 months/ 120 l (31.6 Gal)
3	Hard water (15º-21ºdH)	Approx. every 6 weeks/ 60 l (15.8 Gal)	Approx. every 6 weeks/ 90 l (23.75 Gal)
4	Very hard water (over 21ºdH)	Approx. every 4 weeks/ 30 l (7.9 Gal)	Approx. every 4 weeks/ 60 l (15.8 Gal)

6.5 SBS valve

Beverage dispensing
The SBS brew unit valve (see fig. 2) can be used to vary (increasing or decreasing depending on the position of the knob) the amount of water passing through the brew unit.
This adjusts coffee brewing time (extraction time) and consequently the intensity of taste, keeping the cream quality constant.

Function
With the SBS valve in the open position, coffee is accumulated in the membrane valve due to a low back-pressure of the SBS valve. Consequently the membrane valve needle remains in the maximum open position, due to resistance of the spring. Coffee comes out quickly (see Fig. 3).
With the SBS valve in the closed position, coffee is accumulated on the membrane of the valve with a consequent increase in pressure in the valve. The spring yields to the back-pressure and the needle then reduces the coffee passage (see Fig. 4).

Fig.1

Fig.2

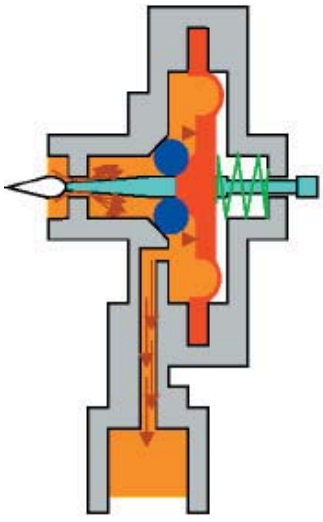


Fig.3

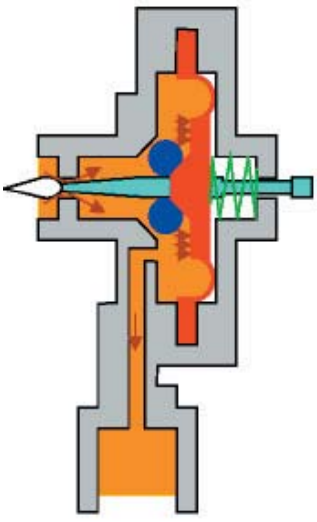
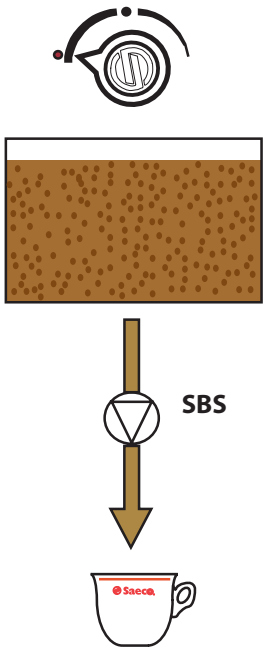


Fig.4

Checking function of SBS valve

To ensure correct operation of the SBS valve a caffe lungo should be made. During preparation of the latter, check the difference in speed of delivery between the maximum and minimum positions.
The difference in dispensing speed is approx. 2.5 times greater (and therefore VERY obvious!!)

Knob MAX position

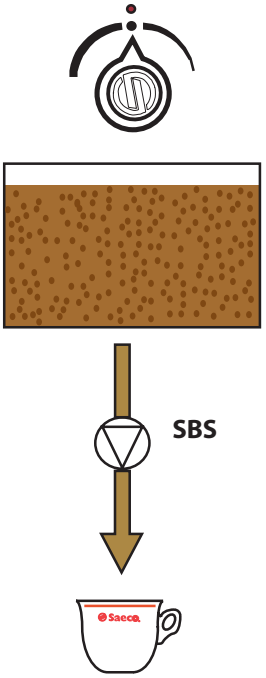


-> Rapid coffee delivery
-> Good coffee brew
-> Medium counter-pressure

(Mild coffee)

CAFFÈ CREME

Knob MED position

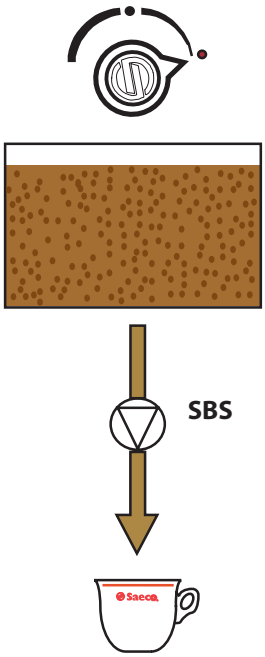


-> Medium coffee delivery
-> Good coffee brew
-> Medium-high counter-pressure

(Medium-strong coffee)

ESPRESSO

Knob MIN position



-> Slow coffee delivery
-> Maximum coffee brew
-> High counter-pressure

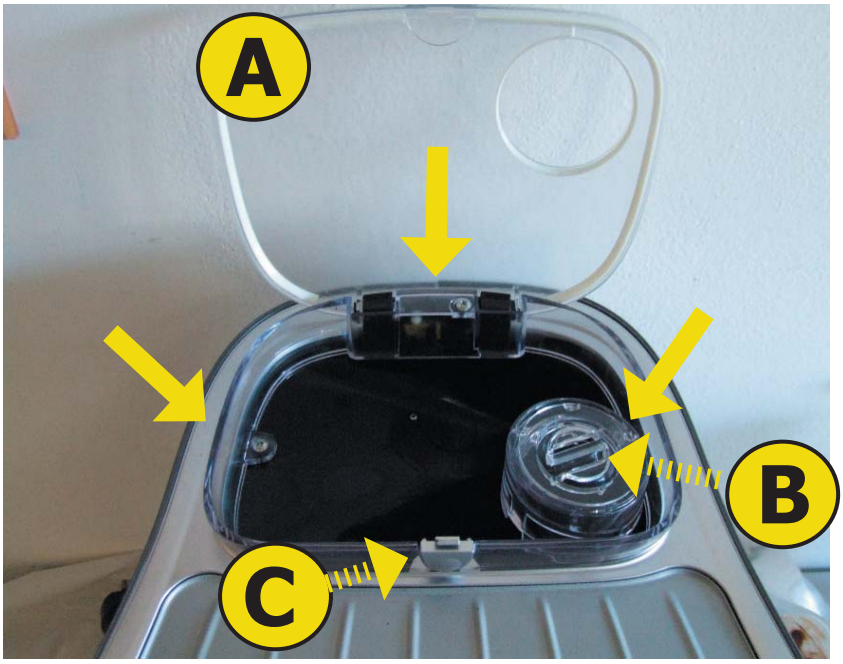
(Strong coffee)

RISTRETTO

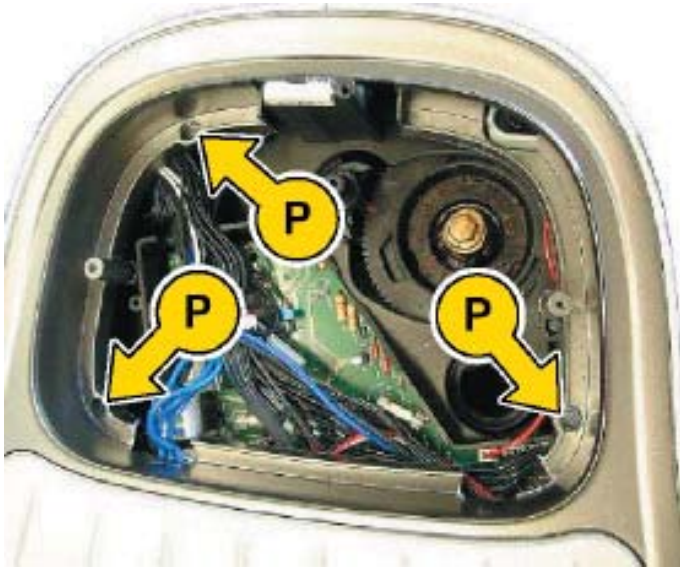
CHAPTER 7 COMPONENT ASSEMBLY AND DISASSEMBLY

REV.00

7.1 Top cover

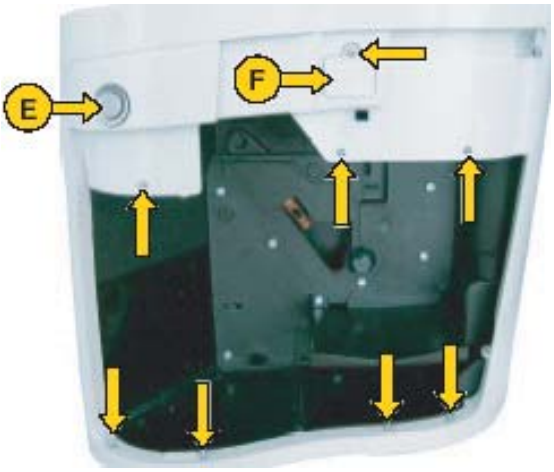


Open cover (A).
Remove pre-ground shoot (B).
Remove lid latch (C).
Loosen the three fixing screws of the hopper, complete with cover.



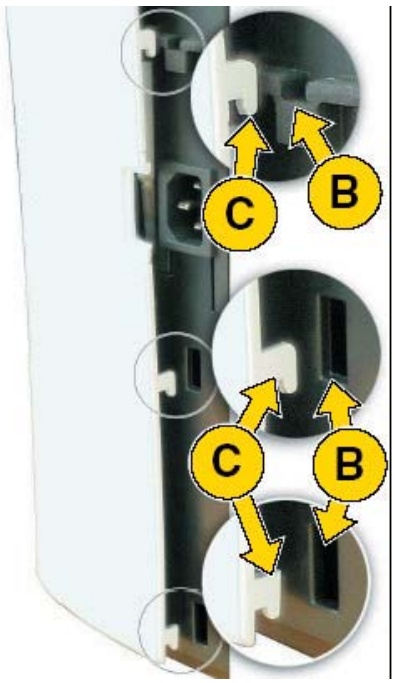
Release the end section of the top cover by loosening the three screws (P).

7.2 Right-side cover



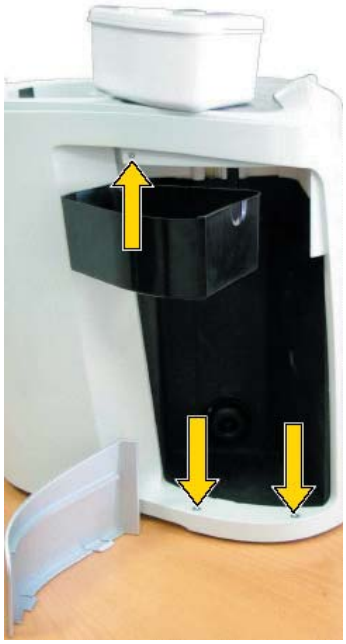
Move the drip tray to the lower limit position.
Disassemble the start touch sensors (E).
Remove the door (F) protecting the connection socket of the setting device, by means of a #10 torx driver.
Loosen the screws as indicated.

Raise the rear section of the top cover slightly.



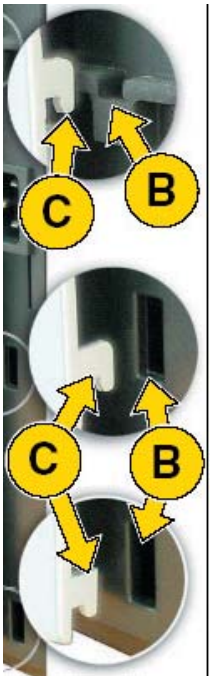
Push the upper section of the right side cover upwards to release from hooks (C) from slots (B).
To facilitate release, push the front section of the cover downwards.

7.3 Left-side cover



Loosen the screws as indicated.

Raise the rear section of the top cover slightly.



Push the upper section of the left side cover upwards to release from hooks (C) from slots (B). To facilitate release, push the front section of the cover downwards.

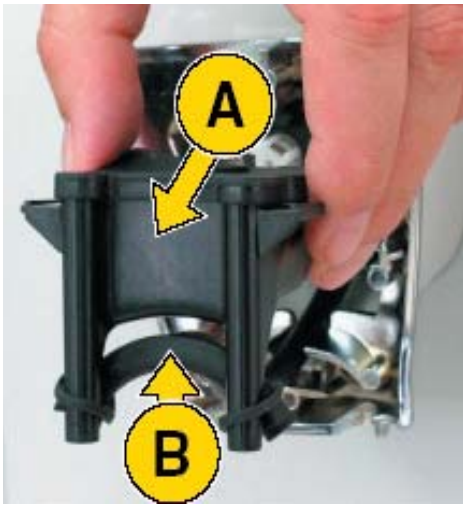
7.4 Brew unit

Remove the knob with the Saeco logo by pulling outwards.

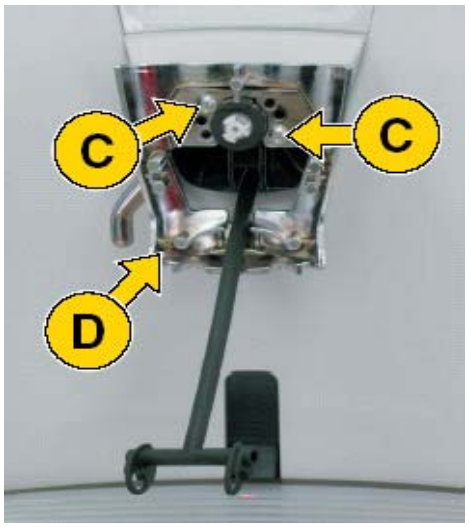
Loosen the central screw retaining the internal dispensing head connector.

To remove the front dispensing body, loosen the screws as indicated.

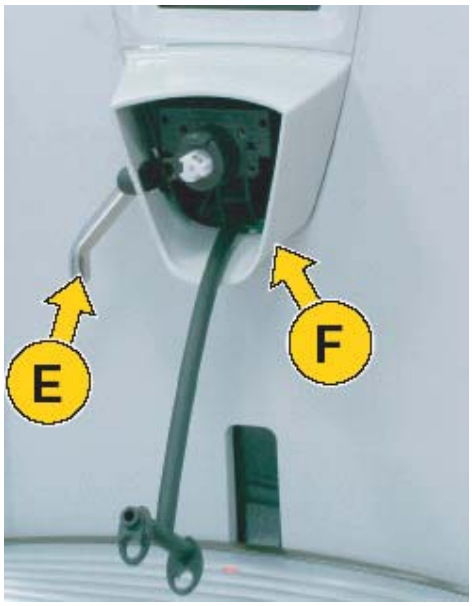
Remove the dispensing head cover



Slide the central dispensing body (A) and remove it from the milk dispensing spout (B).



Loosen the two screws (C) and remove therear dispensing body (D).



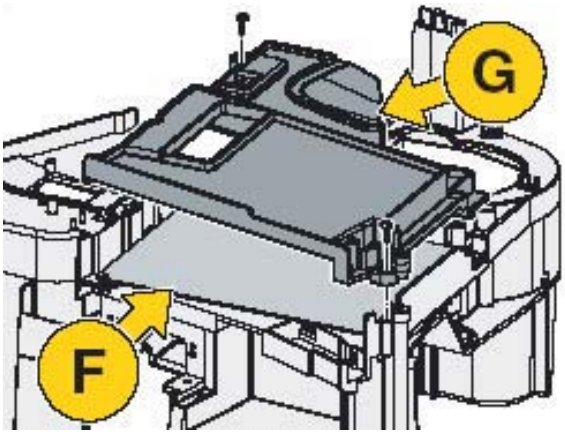
Extract the hot water dispensing spout (E).
Remove the spacer of the dispensing head bodies (F).

Loosen the two screws securing the display protection.

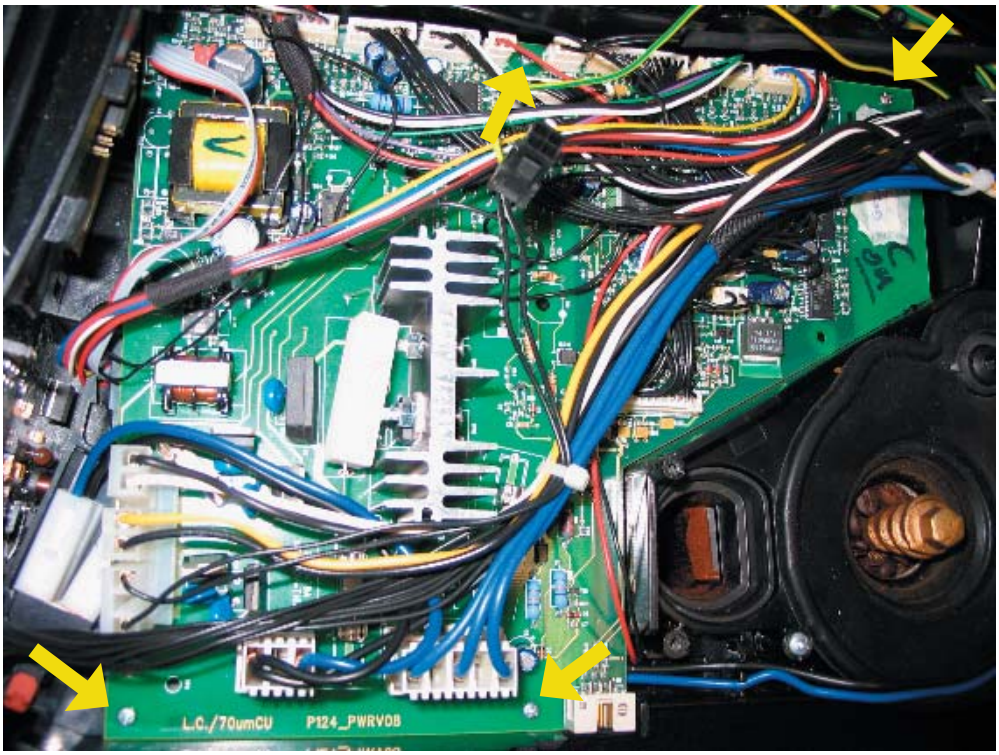
Loosen the two screws securing the front cover.

Assembly:
to assemble, follow the above sequence in reverse order.

7.5 Electronics

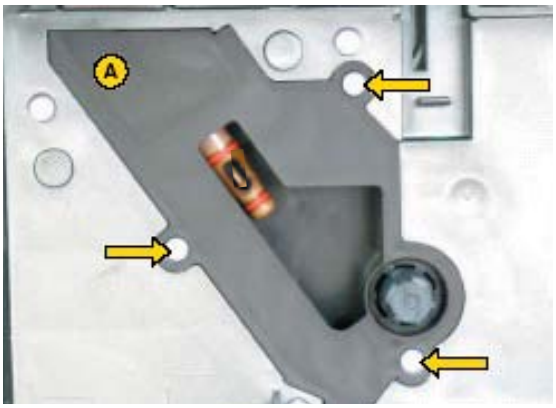


To access board (F) loosen the board protection screws (G).

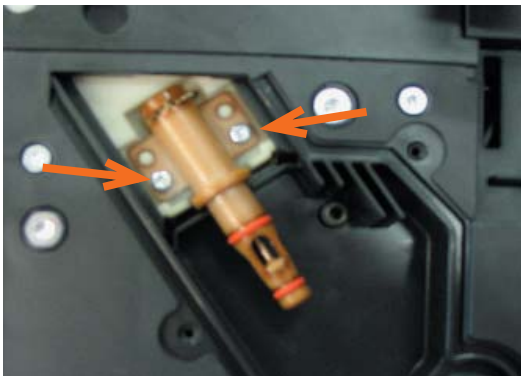


Loosen the screws as indicated and remove all connectors.

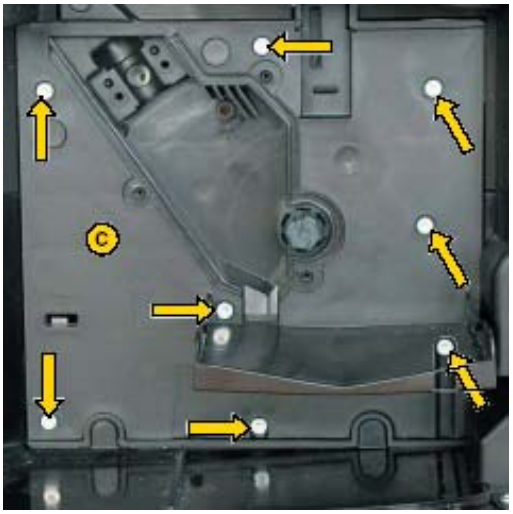
7.6 Gearmotor



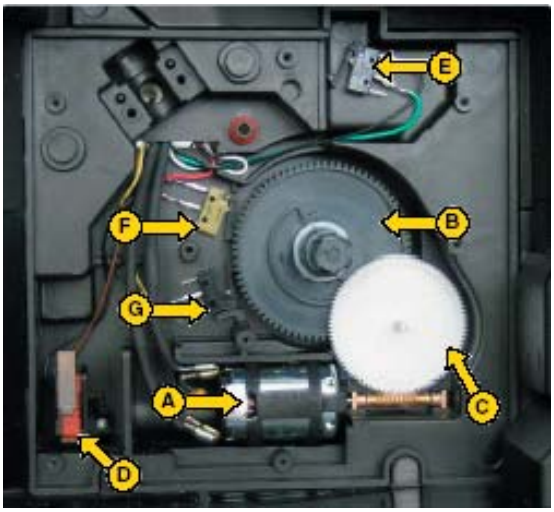
Remove the casing (A) by loosening the three screws.



Loosen the two screws and remove the boiler valve (B).



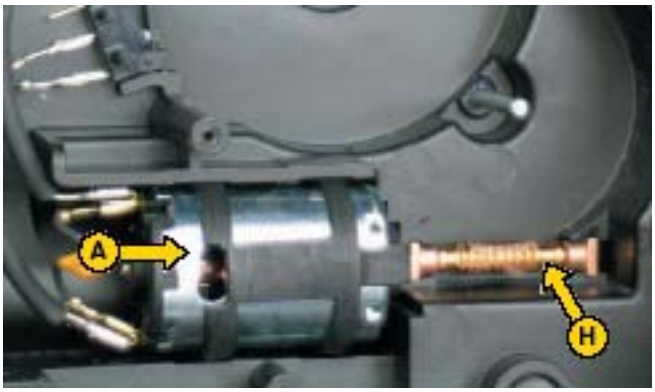
To remove protection plate (C), remove the indicated screws.



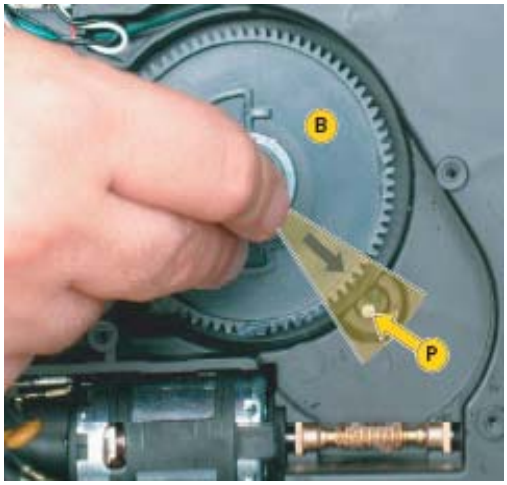
The following are located inside the compartment protected by the guard:

- Brew drive (A) with gears (B) and (C) for transmission and timing of the dispensing head;
- grounds drawer present microswitch (D);
- Dispensing head present microswitch (E);
- Microswitch (F) - dispensing head in home position;
- Microswitch (G) - dispensing head in dispensing position.

Remove the gear (C) that meshes with the brew drive transmission shaft.
Remove the large gear (B).
Pull out the brew drive (A) complete with transmission shaft (H).

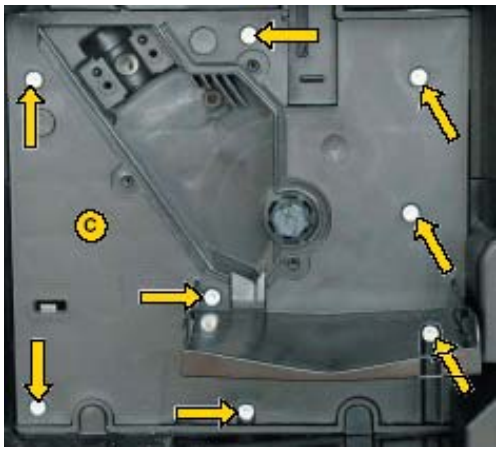


Install the brew drive and transmission shaft, inserting the guides (L) in the relative seat. Flat side of the guide face up.

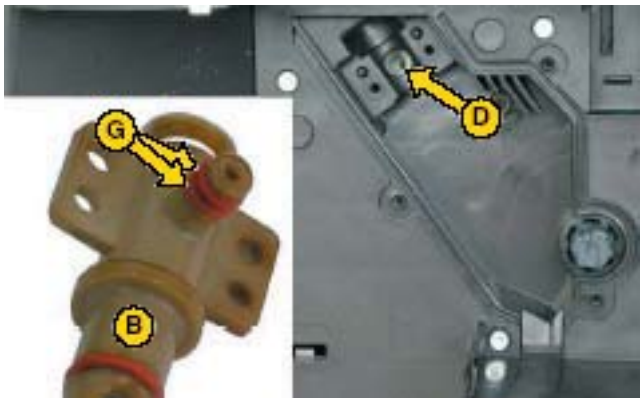


Insert the gear (B), taking care that the arrow stamped on the element is within the opening that contains pin (P).

Insert the gear so that it meshes with the transmission shaft.



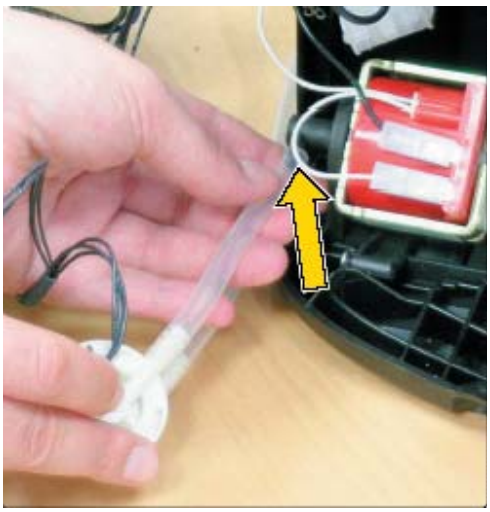
Refit the protection casing (C) and tighten the screws



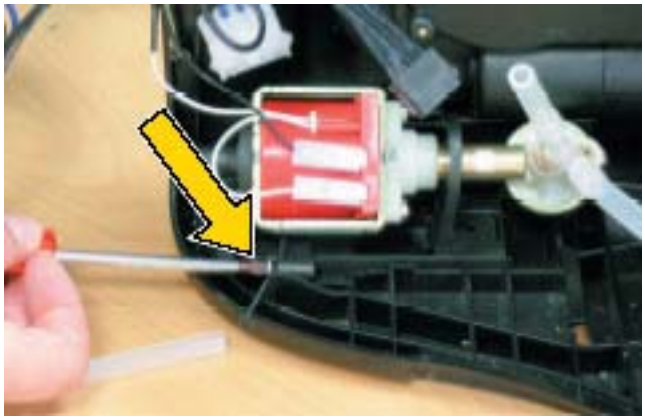
When installing the boiler valve (B), verify both O-rings (G) are present on the spout that is inserted into the pipe opening (D).

Tighten the screws of the boiler valve.
WARNING: ensure both screws are pushed fully down before tightening.

7.7 Pump

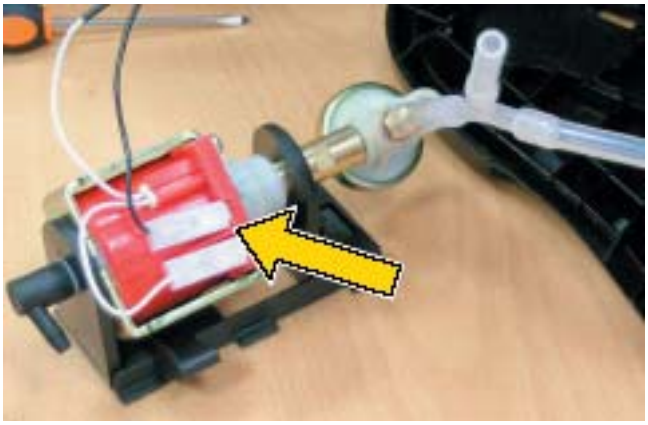


Remove the silicon tube that comes from the turbine.



Loosen the screw securing the pump carriage.

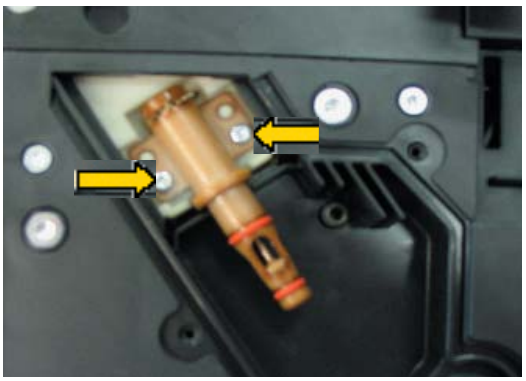
Move the pump carriage forward and extract the unit (carriage, pump and membrane).



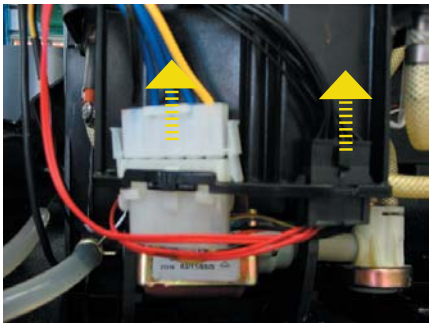
Detach the electrical connections and silicon tube of the valve stem.

Assembly:
to assemble, follow the above sequence in reverse order.

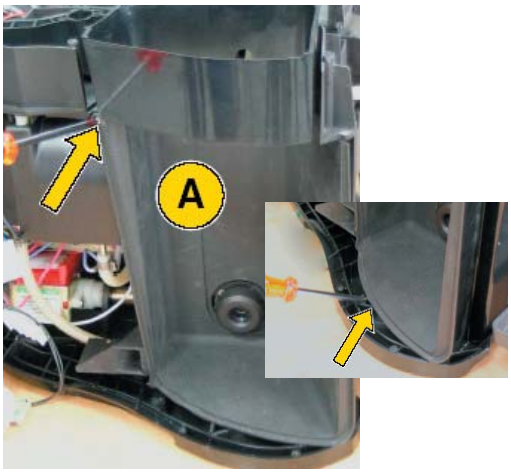
7.8 Boilerand multi-way valve assembly



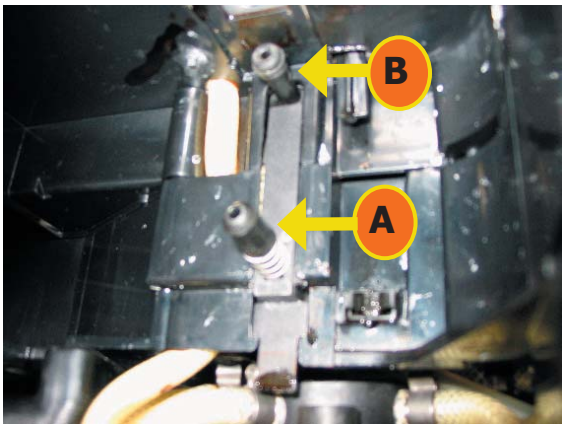
Loosen the boiler valve screws.



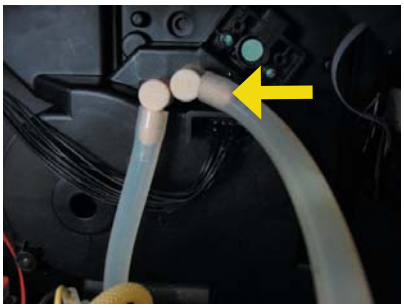
Detach the connectors as indicated.



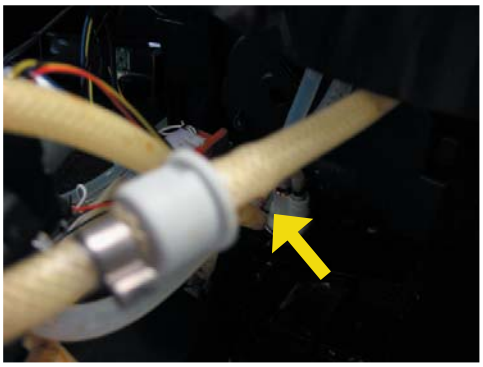
Loosen the screw securing the protection casing (A) of the water tank, detach the base of the casing from the retainer by lifting it using a screwdriver and pulling it outwards.



Detach the milk connector (A), extract and pull steam connector (B) downwards.



Remove the drain tube connector.

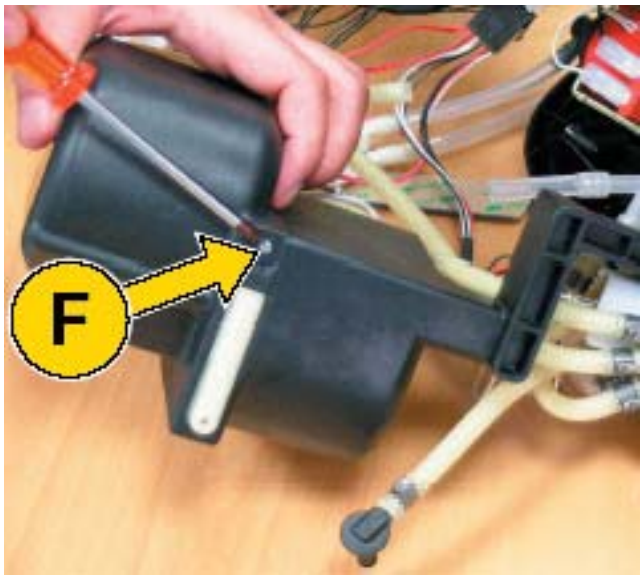


Remove the silicon tube that comes from the non-return valve.

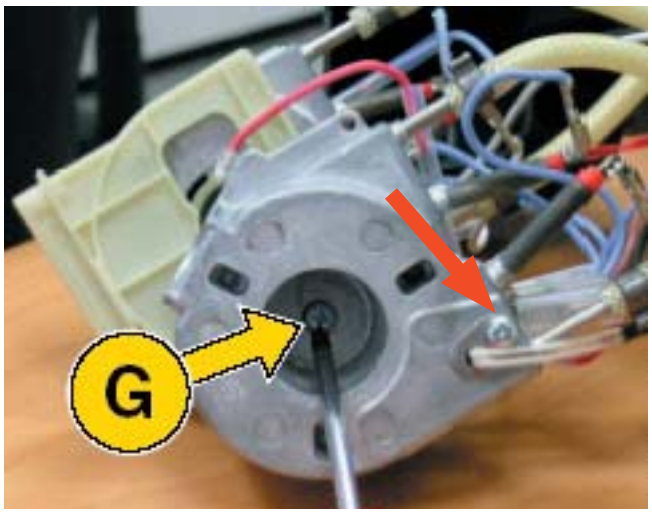
Remove the boiler assembly by sliding it along its guide (E).

Depending on the work required, access the boiler assembly or multi-way valve.

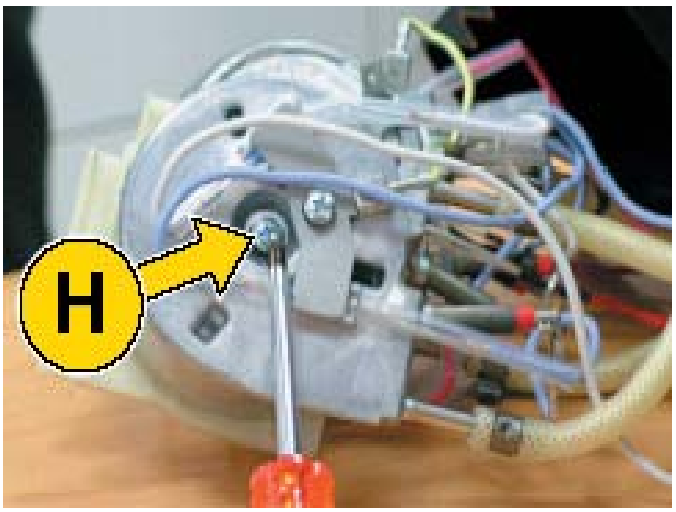
7.9 Boiler



Remove the safety guard by loosening screw (F) and withdraw the boiler assembly from the casing.

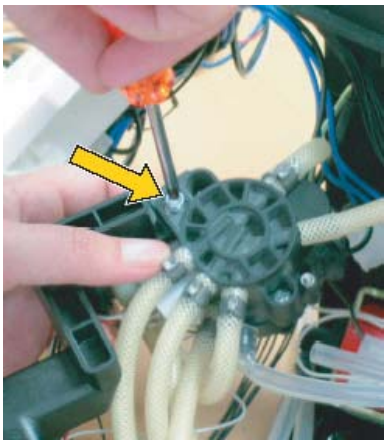


To separate the boilers from the plastic support, loosen the internal screw (G) to release the coffee boiler. To remove the temperature sensor, remove the red indicated screw.

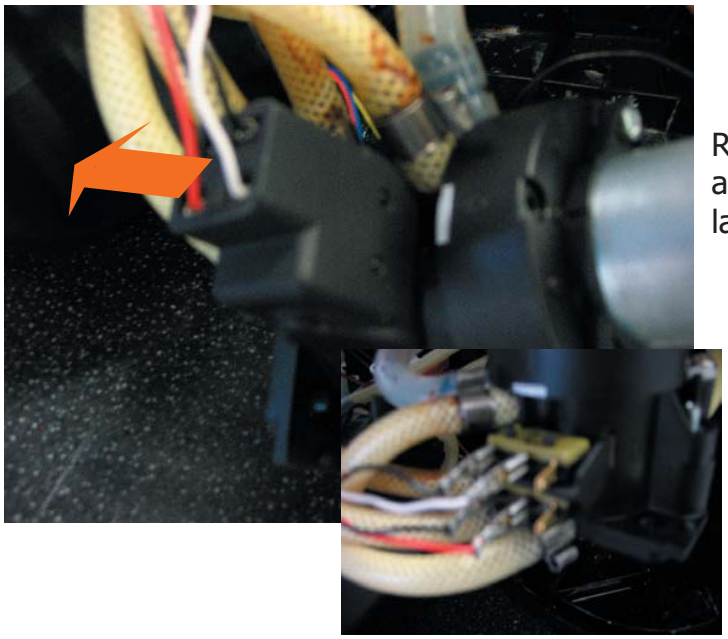


Loosen the external screw (H) to release the steam boiler.

7.10 Multiway valve



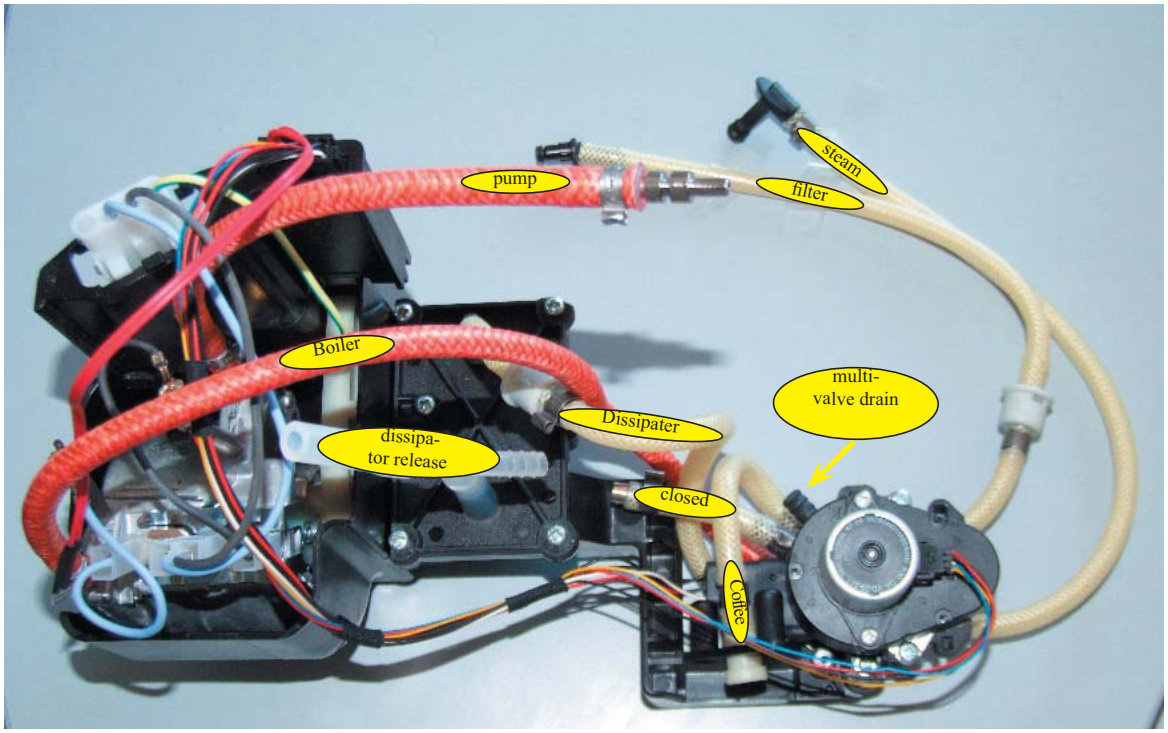
Remove the multi-way valve from the casing protecting the boilers, by loosening the screw as indicated.



Remove the cover of the microswitches and disconnect the wires from the latter.

Disconnect all water hoses from the opposite side of the multi-way valve.
The multi-way valve is supplied complete with hoses.

Touch and Ring Multi-Way Valve Assembly



The pressure must be released on single boiler models to reset the coffee or hot water functions.

The steam will be cooled in the dissipator and released into the drip tray below thebrew unit.

7. 11 OETIKER clamp assembly and disassembly

Boiler clamps

1 **BOILER**

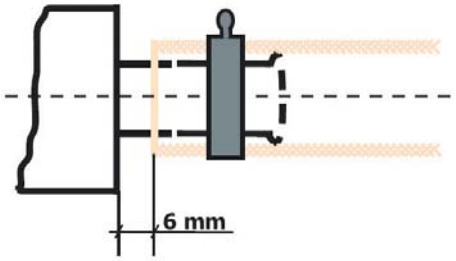


Figure (1) shows the assembly position of the clamp on the boiler connector.

Multi-way valve clamps

2 **Multi-way valve**

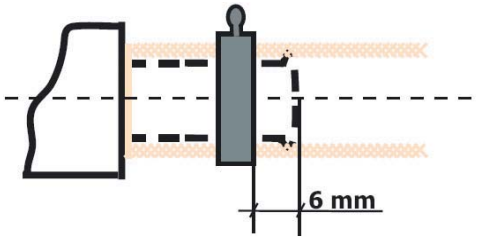
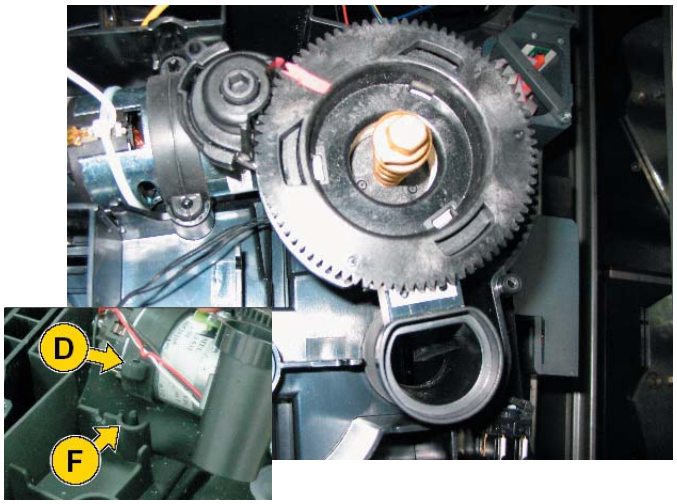


Illustration (2) shows the assembly position of the clamp on the plastic connector of the multi-way valve.

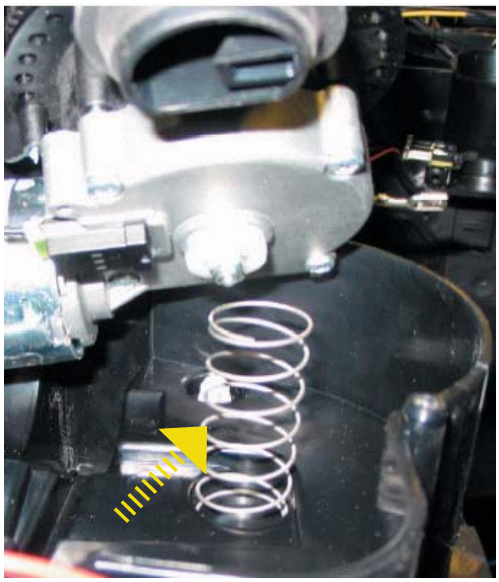
Use suitable pliers to tighten the clamp. Ensure correct tightening (A) and positioning as shown in illustrations (1) / (2).

To remove the clamp, use a pincer as shown in (B)

7.12 Coffee grinders

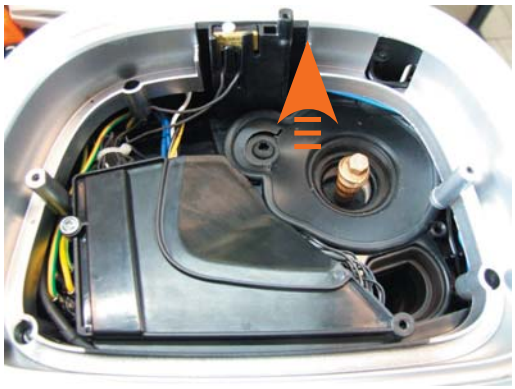


Detach the connectors from the board and remove the grinder by pulling it upwards to release slot (D) from pin (F).

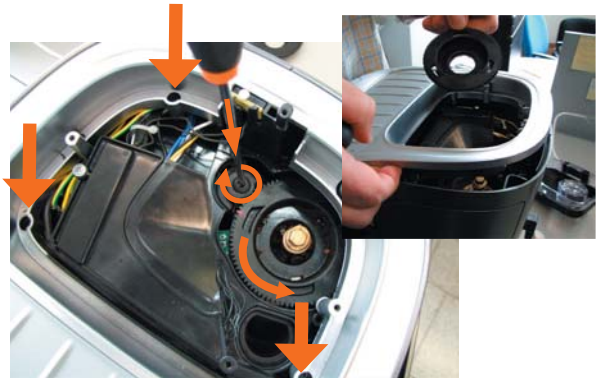


Ensure that the spring indicated is aligned correctly in its seat.

7.13 Grinder adjustment/assembly and disassembly



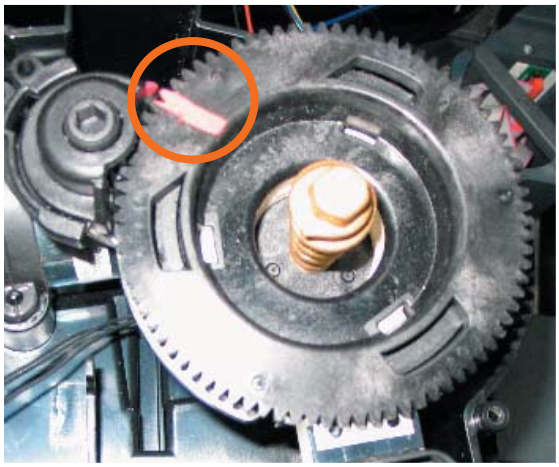
Remove the coffee container and rubber seal.



To remove the upper burr support, loosen the three screws as indicated, then use a hex key, turning it clockwise to release the grinder support from the bayonet coupling.

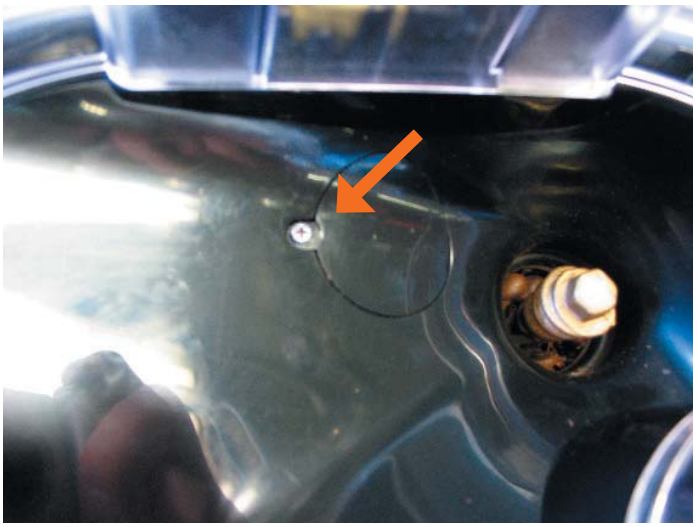
To remove the upper burr, rotate anti-clockwise until it detaches from the bayonet coupling.

On the lower burr, keep the incrementpin as indicated locked in position and proceed as shown in the figure above.

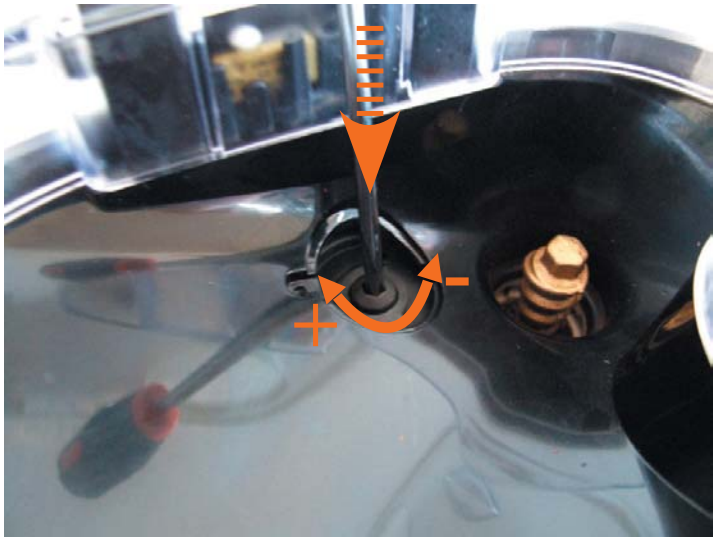


When refitting the upper burr support, take care to reposition the mark as shown in the photo.

7.14 Grinding adjustment



Remove the screw from the door

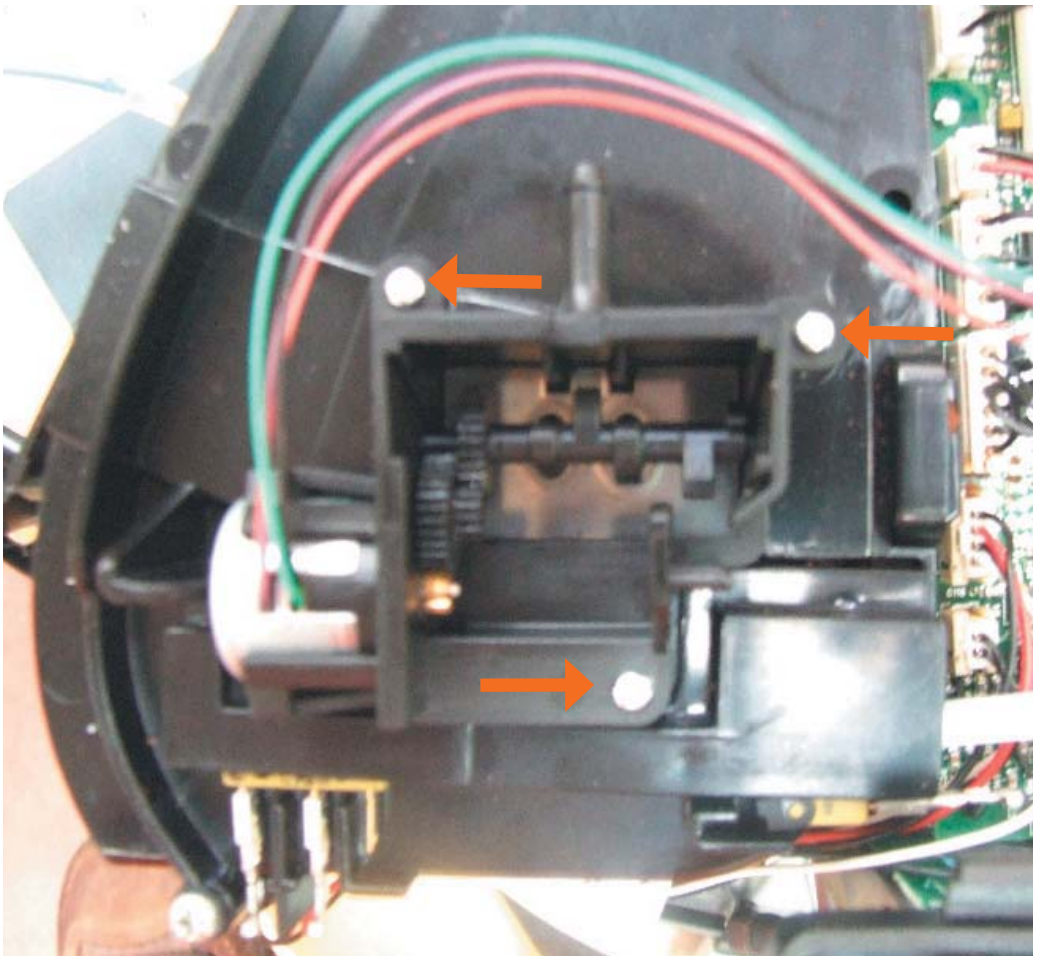


To adjust grinding, press on the element with a hex key.
(+) = Coarse ground.
(-) = Finely ground.

WARNING:

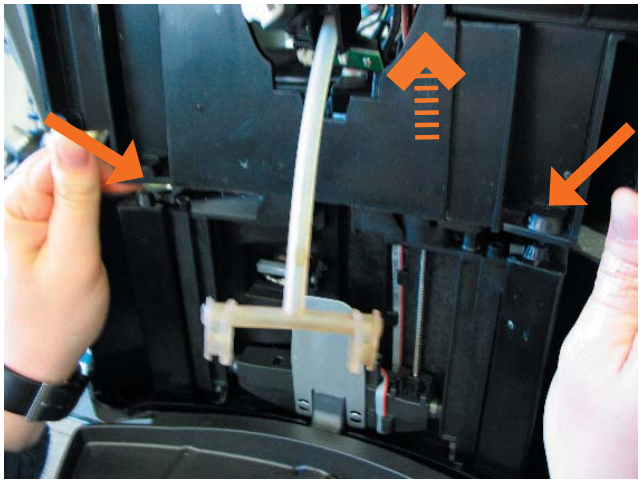
- **Grinder must be adjusted with the motor stationary.**
- **Adjust the grinding level by one step at a time.**
- **After completing settings, start the coffee cycle and run two grinding cycles.**
- **Repeat if further adjustment is required.**

7.15 Autocappuccino.

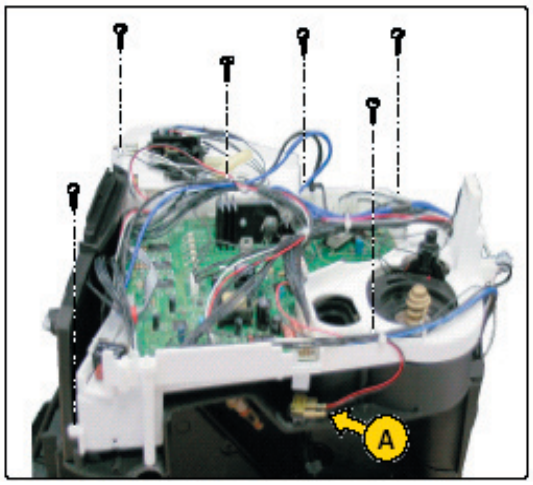


Withdraw the connector from the electronic board and loosen the three screws as shown.

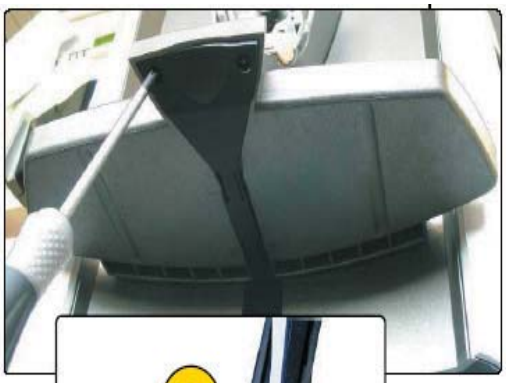
7.16 Motor-driven drip tray.



Move the tray to the lower position.
Loosen the screws as shown and lift the upper part off.
Remove the motor-driven tray from its seat by pulling upwards.



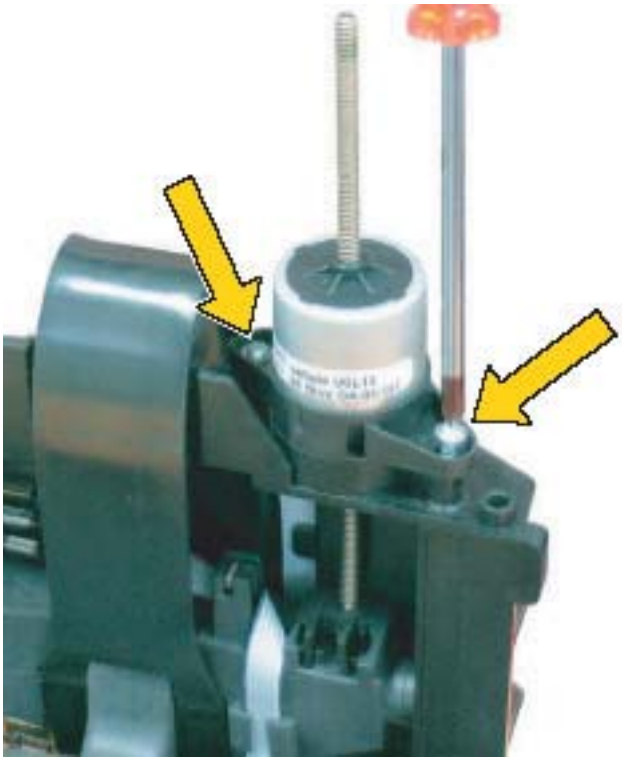
Loosen the screws securing the horizontal plate, remove the connectors from the board and pull them out by gently lifting thehorizontal plate.



For access to the sensors, loosen the two screws to remove the casing below the drip tray.

Remove electrical connections (G) as indicated.

Disassembling the motor-driven tray stepper motor



Loosen the two screws to release the brew drive with worm gear

To withdraw the stop (A) use pliers to grip the tabs securing the lifting system to the base and pull outwards. Withdraw the brew drive with worm gear from above.

CHAPTER 8
SERVICE SCHEDULE

REV.00

8.1 Routine maintenance checklist

S= Replacement
R= Service
P= Cleaning
D= Descaling
C= Inspection
***= Number of beverages dispensed**

Parts	Task			Reason	Item
	Maintenance	5,000*	10,000*		
Casing, tanks, containers, power cable	C	C	C	Dirty, damaged	see documentation (exploded drawings)
Water coffee andmilk pipes					
GACO DIM 14 seals	S	S	S	Wear	
Water filter	S	S	S	Dirty, hygiene	
Silicon tube	C	D	D	Dirty, scale, leaks	see documentation (exploded drawings)
Turbine	C	D	D	Dirty, scale, leaks	see documentation (exploded drawings)
Boiler	C	D	D	Dirty, scale, leaks	see documentation (exploded drawings)
Multi-valve	C	D	D	Dirty, scale, leaks	see documentation (exploded drawings)
Boiler valve o-ring	S	S	S	Dirty, scale, leaks	
Dispensing head	P	P	P	Dirty, hygiene	see documentation (exploded drawings)
Cappuccino valve	P	P	P	Dirty, hygiene	see documentation (exploded drawings)
Grinder					
Burrs Check strength of ground coffee	P C	P C	P C	Dirty, hygiene Grain size and dose	see documentation (exploded drawings)
Brew unit					
Cleaning	C	R	R	Dirty, hygiene	
Lubrication	C	R	R	Dirty, hygiene	
O-ring	C	S	S	Wear	see documentation (exploded drawings)
Full service	C	C	C	Wear	
Other tasks					
Descale	C	D	D	Then check condition of parts	
Temperature check	C	C	C	Client information	
Explanation of fault	C	C	C	Client information	
Safety check	C	C	C	**Always**	
Packing	C	C	S	Check, always	Use new packaging if necessary

CHAPTER 9

AMENDMENTS MADE TO TECHNICAL SERVICE MANUAL

REV.00

List of amendments made to manual REV.00 March 07

DATE	REV.	CHAPTER	SECTION	SUB-SECTION	Description
28/03	0	2	2.2		Photo showing milk tank compartment
28/03	0	5	5.1		various
28/03	0	5	5.2	5.2.2	
28/03	0	5		5.2.3	
28/03	0	5		5.2.4	
28/03	0	5		5.2.5	
28/03	0	6	6.1		Touch Plus, Touch and Ring multiway valve
28/03	0	6	6.2		Autocappuccino